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Developing a Korean Version of the Experiences in Close Relationships Scale Using Quantitative Methods for Verifying Semantic Equivalence

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Developing a Korean Version of the Experiences in Close Relationships Scale Using Quantitative Methods for Verifying Semantic Equivalence

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Abstract

The aim of this study was to verify semantic equivalence of a Korean version of ECRS using quantitative methods. Data were collected from 204 bilingual Koreans. The criterion sample included the 399 American college students surveyed by Mallinckrodt and Wang (2004). After translating the ECRS from English to Korean, five analyses for semantic equivalence were conducted: mean differences, DLSH reliability, internal reliability, test-retest reliability, and construct validity. First, the English items were equivalent to the Korean items except for the Avoidance subscale from Form B when comparing means differences. In addition, the English and Korean versions of each subscale showed good model fit except for the Avoidance subscale from Form B in the second administration. Second, regarding DLSH reliability, correlations in the bilingual sample between the English and Korean items were not equivalent to the correlations in the criterion sample between the English-only items. Third, ECRS-K exhibited high internal consistency. However, compared to the criterion sample, the internal reliability of the DLSH version for the Korean bilingual participants was not equivalent to the internal reliability of the English version for the American participants, except for the Anxiety subscale from Form A. Fourth, the bilingual sample showed appropriate temporal stability across a two-week interval between the English and Korean subsets. Lastly, a measure of construct validity, Fear of Intimacy, demonstrated an expected positive relationship with the Avoidance subscale. Unexpectedly, Fear of Intimacy also exhibited a positive correlation with the Anxiety subscale. Furthermore, another measure of construct validity, Social Self-Efficacy, showed an unexpected positive correlation with the Anxiety subscale. Overall, ECRS-K has good internal reliability and retest reliability alone; however, ECRS-K was not parallel to the English version in terms of reliability and validity. Unexpected findings, their probable causes, and implications are

discussed.

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Chapter 1

Introduction and Literature Review

Adult Attachment

Bowlby (1969) theorized that attachment is originally established through the infant-caregiver relationship. Bonding between infant and caregiver protects the infant from stress (e.g., hunger) and environmental threats (e.g., stranger) and maintains parental caregiving, especially during infancy and early childhood (Mikulincer & Shaver, 2007). A child's attachment behaviors are activated when the child is vulnerable, threatened, fatigued, or sick and deactivated when the child is protected, helped, or soothed by attachment figures (Bretherton, 1985). If children experience consistent, responsive, and supportive care, they develop feelings of worth, confidence, and interpersonal trust. Infants develop internal representations of themselves and others based on their interactions with their caregivers (Bowlby, 1988).

According to Bowlby (1969, 1973), attachment patterns that are established early in an infant-caregiver relationship persist into adulthood because of generalized expectations about the self, others, and the world. For example, a child's internal working model is generalized to other relationships, such as an adult romantic relationship. Individuals try to find a romantic partner who confirms their internal working models of self and others and reenacts familiar relationship patterns. This reinforcement tends to preserve the same pattern of internal working models from infancy to adulthood (Erdman & Ng, 2010). Secure and insecure orientations in adult attachment resemble childhood attachment: (a) people with secure adult attachment perceive themselves as worthy of care, are less sensitive to rejection from a partner, and comfortably depend on a partner in a romantic relationship; (b) people with anxious/ambivalent attachment excessively worry about not being loved or being abandoned by a partner; and (c) people with avoidant

attachment are uncomfortable with closeness, trust, and depending on a partner (Hazan & Shaver, 1987).

Although attachment theorists have conceptualized the consistency of attachment patterns from "the cradle to the grave" (Bowlby, 1979), the controversial nature of this idea has inspired scholars to conduct empirical longitudinal studies. Bowlby's attachment theory does not directly explain attachment stability from infancy through adulthood. Some researchers have argued that attachment patterns might change with experience over time (Fraley, 2002). Fraley reported that the secure-insecure classification of parental attachment was stable (r = .39) across a lifetime based on his meta-analysis of longitudinal data.

Waters, Merrick, Treboux, Crowell, and Albersheim (2000) found that early attachment was significantly related to adult attachment 20 years later. In this study, 64% of participants remained in one of three attachment classifications, Secure, Avoidant, and Resistant, from infancy to early adulthood. However, 36% of participants changed classification. These shifts might be due to reliability problems in the measure or to experiences in the interval between childhood and adulthood. Waters et al. (2000) observed that a stressful event (e.g., loss of a parent, divorce, illness, parental psychiatric disorder, or abuse by a family member) had an impact on securely attached infants. Notably, the participants of this study were White middle-class children.

Another study found that infants who were raised in a "challenging environment" showed less continuity from infancy to early adulthood (Weinfield, Sroufe, & Egeland, 2000). This study collected data from a low-income sample with high risk for poor developmental outcomes, of which 91% reported at least one negative life event. This sample showed a predominance of insecure classifications in adulthood (39 out of 57 participants) and lack of continuity in

attachment classification, the most common change of direction being toward greater insecurity. Differences between the continuity group and the discontinuity group were negative experiences such as child maltreatment, maternal depression, and family dysfunction in early childhood. Researchers explained that the high-risk sample had a less stable environment and less stable relationships than the middle-class sample.

Therefore, negative life events are an important factor in discontinuity of attachment classification from infancy to adulthood. Those life-threatening experiences challenge early attachment representations, which are revised and updated to reflect new experiences. In addition, poverty and high risk for poor development played a role in discontinuity of attachment classification. These results are consistent with the idea that attachment can be relatively stable yet somewhat open to change throughout life (Bowlby, 1973).

Cultural Universality of Attachment Patterns in Young Children

When we consider the cultural universality of attachment, the following question is a good place to begin: "How widespread and consistent are the observed features of attachment between caregivers and infants or young children?" Bowlby (1969) stated that infant-caregiver attachment is based on evolution and has survival value for the human species because attachment behavior increases the likelihood of infant-caregiver proximity, which leads to the protection and survival of helpless offspring. Children are biologically predisposed to be attached, regardless of whether caregivers actually meet their physiological needs (Van Ijzendoorn & Sagi-Schwartz, 2008). Bowlby (1956) observed that infants were attached even to abusive mothers.

Theorists who argue for universality in childhood attachment claim that the core components of attachment are fundamental and universal across all human cultures (Yalcinkaya,

Rapoza, & Malley-Morrison, 2010). Ainsworth (1967) created her classification system for infant-mother attachment based on field study in Uganda: avoidant, secure, resistant, or ambivalent. Her study was the first to examine cross-cultural attachment security (Van Ijzendoorn & Sagi-Schwartz, 2008). More recent cross-cultural studies have tested whether those core components of attachment theory (universality, normativity, sensitivity, and competence) first identified in Western cultures are applicable to other cultures (Van Ijendorrn & Sagi-Schwartz, 2008). These core components imply that (a) all infants establish attachment to their caregivers, (b) a caregiver's level of responsiveness and sensitivity determines the quality of attachment bonds, and (c) secure attachment predicts positive outcomes in later life (Van Ijzendoorn & Sagi-Schwartz, 2008). In terms of normality, Jin, Jacobvitz, Hazen, and Jung (2012) reported that a majority of Korean infants were securely attached. The relative frequency of attachment types (secure vs. insecure) was not significantly different in the Japanese, U.S., and global samples (Jin, Jacobvitz, Hazen, & Jung, 2012).

On the other hand, some theorists and researchers have pointed out important differences in childhood attachment across cultures. Rothbaum, Weisz, Pott, Miyake, and Morelli (2000) argued that the so-called "core components" of attachment theory reveal a bias towards Western culture and that attachment theorists and researchers are "culturally blind" to other conceptions of relatedness. Rothbaum and his colleagues (2000, 2001) emphasized different contextual meanings and expressions in different cultures to understand their own frames of reference. The researchers compared Western attachment to a unique Japanese aspect of relatedness known as *amae*. *Amae* refers to children's expectation to be indulged even though their requests are inappropriate and parents' willingness to grant the request (i.e., indulgence and interdependence in the young child-mother dyad) (Rothbaum, Kakinuma, Nagaoka, & Azuma, 2007). Rothbaum

et al. (2000) mentioned that behaviors perceived as attachment ambivalence from the Western point of view are culturally appropriate behaviors in Japan. Interdependence is perceived as security in Japan while autonomy means security in the United States (Rothbaum et al., 2007). For example, although the secure-insecure general classification had a relatively similar frequency among the Korean, Japanese, U.S. and global samples, significant differences in frequency emerged between specific infant-caregiver types of insecure attachment. Specifically, attachment ambivalence had a much higher frequency in the Korean (21%) and Japanese (32%) samples than the U.S. and global samples (12%) (Jin, Jacobvitz, Jung, & Hazen, 2012). In a comparative study of adult attachment, East Asian (Hong Kong China, Taiwan, Korean, & Japan) people had significantly higher levels of preoccupied adult attachment than people from North America; South America; Western, Eastern, and South Europe; Middle East; Africa; and South and Southeast Asia (Schmitt, Alcalay, Allensworth, Allik, Ault, & Austers, 2004).

Cultural Variations in Adult Attachment

Even if we accept the position that cultural variation in the way attachment is exhibited by young children across the world is only slight, adult attachment could still "branch out" from a similar biological foundation in young children to take various forms in adults across cultures. Perhaps culture has a significant impact on attachment in adulthood. Western culture tends to emphasize self-reliance, autonomy, and an assertive view of self (Rothbaum et al., 2000) that is deeply rooted in attachment theory developed in Western and industrialized societies (Van Ijendoorn & Sagi-Schwartz, 2008).

Individualistic and collectivistic cultures have different points of view about interpersonal relationships. Individualists focus on their uniqueness from others; however, collectivists perceive themselves as a part of a social group (Markus & Kitayama, 1991) and value social

harmony (Kim & Markus, 1999) and interconnectedness in the context of romantic relationships (Oishi & Diener, 2001). In the same vein, the autonomy valued in an individualistic society is perceived as immature and unenlightened in a collectivistic society (Rothbaum et al., 2000). Cheng and Kwan (2008) suggested that cultural orientation could explain why Hong Kong Chinese college students reported more anxious and avoidant adult attachment than Caucasian international college students in Hong Kong. Because individualists tend to value autonomy and independence, they might be less willing to rely on others and worry less about being alone. In contrast, collectivistic cultural values cause young adults to have heightened concerns about connections to others, leading to higher levels of attachment anxiety. At the same time, cultural prohibitions of public displays of emotion might lead to higher levels of attachment avoidance.

East Asian college students, including Korean, Chinese, Hong Kong Chinese, and Asian American, reported more anxious and avoidant adult attachment than American college students (DiTommaso, Brannen, & Burgess, 2005; Friedman et al., 2010; Wei, Russell, Mallinckrodt, & Zakalik, 2004; You & Malley-Morrison, 2000). Korean college students scored higher on preoccupied attachment styles than American college students (You & Malley-Morrison, 2000). Chinese college students exhibited less security in adult attachment than Canadian college students (DiTommaso, Brannen, & Burgess, 2005). College students in Hong Kong were higher in attachment anxiety and avoidance than college students in the United States (Friedman et al., 2010). These high anxiety and avoidance attachment patterns were also found in U.S. Asian-American college students more frequently than in Caucasian college students (Wei et al., 2004). These cross-cultural studies also pointed out methodological issues related to equivalence, bias, and translation.

Wang and Mallinckrodt (2006) suggested that the Western perspective is not the only way to express secure attachment. Among the most powerful norms in any culture are ones that rule what is considered acceptable and "healthy" in close romantic relationships. To assess these norms in Taiwanese and U.S. cultures, Wang and Mallinckrodt (2006) asked survey respondents to complete the Experience in Close Relationships Scale (ECRS) as "*an ideally emotionally and psychologically healthy person of your own gender in your culture would answer*." Asking about the ideal state of adult attachment allowed individuals to respond directly about their perceptions of their culture's norms for attachment behaviors.

Taiwanese students reported higher avoidance and higher anxiety as their ideal attachment type compared to American students, reflecting Chinese interpersonal cultural norms. Taiwanese people are less likely to value explicit emotional expression. Compared to their American counterparts, Taiwanese students were significantly less likely to agree to the items "I turn to my partner for many things, including comfort and reassurance" and "It helps to turn to my romantic partner in times of need." In addition, people in Taiwan tend to find their identity through group affiliation. Taiwanese students were more likely than U.S. students to agree to the following items: "I resent it when my partner spends time away from me" and "I worry a fair amount about losing my partner." Wang and Mallinckrodt (2006) pointed out that healthy ideal attachment according to Taiwanese culture might seem pathological by U.S. standards, despite being culturally adaptive and acceptable behavior in Taiwan. Attachment theorists have argued that attachment behaviors perceived as maladaptive in Western culture might be viewed as adaptive in other cultures (Yalcinkaya, Rapoza, & Malley-Morrison, 2010).

Measurement of Adult Attachment

Several tools assess adult attachment; however, no single and universal measure for adult attachment exists (Fairchild & Finney, 2006) because instruments are based on theories that vary in terms of attachment orientation. Ainsworth, Blehar, Waters, and Wall (1978) suggested three categories of infant-caregiver attachment patterns based on a field study in Uganda: secure, anxious, and avoidant attachment. Hazan and Shaver (1987) applied infant-caregiver attachment to adult romantic relationships and proposed a self-other polarity to describe the level of anxiety (self) and the level of avoidance (other) in attachment. In addition to Hazan and Shaver (1987), Bartholomew and colleagues suggested a two-dimensional, four-category system for describing adult attachment: secure, preoccupied, dismissing, and fearful. The downside of these various conceptual approaches is a lack of reliability in empirical studies when individuals assign themselves to one category from a limited number of choices (Fraley & Walker, 1998).

Brennan, Clark, and Shaver (1998) developed a scale using empirical analysis to capture adult attachment style. They pooled 482 items from already existing measures and conducted factor analysis by administering the survey to 1,086 psychology students. The authors suggested two independent and orthogonal subscales (i.e., avoidance and anxiety adult attachment), which now comprise the ECRS. The content of the ECRS taps into emotional and behavioral attachment. The ECRS Anxiety subscale measures fear of being rejected, fear of being abandoned, and perceived lack of partner responsiveness. Individuals with high level of Anxiety attachment tend to have a negative working model of self, making them less likely to believe their ability to influence the quality of their relationship. The Anxiety subscale was negatively correlated with the Social Self-Efficacy (SSE) subscale from the Self-Efficacy Scale (Sherer et al., 1982), which assesses the effort to make new friends (Mallinckrodt & Wang, 2004). The

ECRS Avoidance subscale captures fear of intimacy and fear of becoming close to a partner in a romantic relationship (Mallinckrodt & Wang, 2004). Individuals with high level of Avoidance attachment were less likely to disclose their thoughts and feelings, a tendency that is positively correlated with Fear of Intimacy (FIS; Descutner & Thelen, 1991).

The ECRS and has been used internationally and translated into a number of languages, including Chinese (Mallinckrodt & Wang, 2004), Dutch (Conradi, Gerlsma, van Duijn, & de Jonge, 2006), French (Lafontaine & Lussier, 2003), German (Neumann, Rohmann, & Bierhoff, 2007), Greek (Tsagarakis, Kafetsios, & Stalikas, 2007), Hebrew (Mikulincer & Florian, 2000), Italian (Busonera, San Martini, Zavattini, & Santona, 2014), Japanese (Nakao & Kato, 2004), Korean (Kim et al., 2011), Norwegian (Olssøn, Sørebø, & Dahl, 2010), Portugeuse (Moreira, Martins, Gouveia, & Canavarro, 2015), Serbian (Hanak, & Dimitrijevic, 2013), Slovak (Gugová, Heretik, & Hajdúk, 2014), Spanish (Alonso-Arbiol, Balluerka, & Shaver, 2007), and Turkish (S€umer, 2006). It has been acknowledged as one of the most widely used self-report measures with excellent reliability (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010).

ECRS was revised by Fraley and colleagues (2000) using a rigorous statistical method, Item Response Theory (IRT), because some studies of the ECRS failed to confirm the orthogonality of the Avoidance and Anxiety subscales, revealing a lower degree of measurement precision. Fraley and colleagues (2000) analyzed 323 items from four commonly used adult attachment measures. The Experiences in Close Relationships Scale-Revised (ECRS-R) contains 13 of the original Anxiety items and 7 of the original Avoidance items of the ECRS. Although the revised version has a methodologically sound background, Fraley et al. concluded that there was no significant gain in validity (Fraley, Waller, & Brennan, 2000).

Methods to Establish Semantic Equivalence of a Translated Scale

In terms of cross-cultural study, researchers who compare people from different cultural backgrounds use instruments that have been adapted for the cultures in question. Most studies use instruments that were originally developed in the English language and then translated into the target language (Stevelink & van Brakel, 2013). Experimental validity requires that the adapted and the original English version are culturally equivalent instruments (Beck, Bernal, & Froman, 2003; Mallinckrodt & Wang, 2004). However, direct comparison between total scores might not be reasonable if the two versions of an instrument are not identical.

Cross-cultural research faces many conceptual and methodological challenges. One of the most common is linguistic differences between two versions of an instrument. Researchers typically modify wording and content to maximize the linguistic and psychological appropriateness of the tool. For example, Kim et al. (2011) reported that key words used in most adult attachment scales (e.g., "romantic partner" or "partner") are not commonly used in Korean culture. Therefore, Kim et al. (2011) decided to use a more generic term: "others." In addition, Alonso-Arbiol, Balluerka, and Shaver (2007) reported wording difficulties when developing a Spanish version of ECRS. The word "romantic" does not have an appropriate meaning in Spanish, so they used "partner" instead of "romantic partner." Furthermore, the plural form, partners, might have suggested having multiple relationships at the same time, so they decided to use the singular form of the word exclusively. These examples indicate that two different language versions of an instrument might tap into different behaviors in each culture. Therefore, some ideas that the instrument is designed to measure might not come across.

Several researchers have suggested ways to develop a culturally equivalent instrument. Equivalence, which refers to the comparability of an instrument across cultures, should be

established and reported in cross-cultural studies (Ægisdóttir, Gerstein, & Çinarbas, 2008). Herdman, Fox-Rushby, and Badia, (1997) proposed a cultural equivalence framework with five dimensions: conceptual equivalence, item equivalence, semantic equivalence, operational equivalence, and measurement equivalence. *Conceptual equivalence* can be achieved when researchers assess expressions of a concept from the local population. It can be assessed through local literature, local instruments, or discussions with local people. Certain behaviors and concepts might have different meanings in different cultures. *Item equivalence* refers to the relevance and acceptability of each item through quantitative or qualitative analysis. *Semantic equivalence* refers to how the items transfer meaning across languages. Establishing it involves a translation procedure that assesses whether the original meaning of key words and phrases will reach the target population. *Operational equivalence* focuses on discussions about missing data, administration format, and pre-testing the adapted instrument. Finally, *measurement equivalence* includes content validity, construct validity, retest reliability, floor and ceiling effect, interpretability, responsiveness, and IRT analysis. Stevelink and Van Brakel (2013) argued that conceptual equivalence is the most important of the five equivalence dimensions, especially in the early stages of validation. In addition, Flaherty et al. (1988) emphasized the importance of semantic equivalence in cross-cultural studies. A literal translation is not enough because the original meaning behind certain items might not be reflected in a word-for-word translation (Beck et al., 2003). Semantic equivalence can be achieved through translation procedures, including back translation, quality assessment by experts, and consultation with the target population. Without rigorous processes to cover these forms of equivalence, researchers run the risk of conducting an invalid cross-cultural study.

Valmi and Wilaiporn (2011) suggested a seven-step procedure for rigorous language adaptation of an instrument. The first step is translation of the instrument from the source language to the target language by at least two bilingual, preferably bicultural, translators. The second step is to compare the two translated versions using a third independent translator. The third step is back-translation, through which the target language version is translated back into the source language. For this stage, Valmi and Wilaiporn suggested that back-translators should have no experience with the instrument and that their native language should be the same as the source language. The fourth step is to compare the back-translated version with the original version. Up to this forth step, most recent cross-cultural studies use similar translation and back-translation procedures. In a more unique fifth step, Valmi and Wilaiporn suggested conducting a pilot test of the target language version with 10 to 40 monolingual individuals. Participants should evaluate the instructions, response format, and clarity of items. The sixth step is to conduct another test using a bilingual sample. In this case, the participants are asked to respond to the target language version of instrument first and then to respond to the original source language version. The seventh and last step is to conduct a final test using a large sample of the target population in order to conduct factor analysis and reliability and validity checks. Considering the limited money, time, and effort that researchers are willing to spend on a single study, most find these recommendations too difficult to follow.

Mallinckrodt and Wang (2004) proposed the "dual-language, split-half" method (DLSH), which is a quantitative technique for assessing the semantic equivalence of a translated instrument. DLSH is similar to the sixth step proposed by Valmi and Wilaiporn (2011) in terms of providing the two different language versions to bilingual participants; however, DLSH is more efficient and rigorous. It cancels out order effects, fatigue, and priming effects by

presenting half of the items in each language to a bilingual sample (Mallinckrodt & Wang, 2004). In contrast, Valmi and Wilaiporn (2011) suggest presenting the entire measure in both languages, requiring participants to respond twice to each item. First, DLSH creates two alternative forms: Form A consists of half the items presented in the original language and the remaining half presented in the target language, and Form B counterbalances the order of the two languages. This procedure avoids any effects caused by having one language or the other first in the test survey. Second, DLSH shortens the test length to control fatigue effect. Lastly, DLSH prevents priming effects that might occur when exposure to one language version of the instrument influences the response to the other language version of the instrument. In terms of data collection, the two forms are administered to bilingual participants two times. In the first administration, the bilingual participants are randomly assigned to receive one of the two forms: Form A (first half in source language and second half in target language) or Form B (first half in target language and second half in source language). After two weeks, the bilingual participants receive same form as a retest survey. The aims of DLSH are to check for significant differences between the two clusters of items in the source and target languages. This method has two advantages: (a) it provides strong quantitative evidence of the semantic equivalence of an adaption, and (b) it compares not only correlations between subsets of items in two languages but also correlations obtained from a criterion sample (Mallinckrodt & Wang, 2004).

Although it has several benefits, DLSH also has limitations. First, it requires many bilingual, preferably bicultural, participants as well as a large criterion sample. DLSH is a way to verify semantic equivalence; consequently, it is necessary but not sufficient for accurate adaptation. Researchers should consider other types of equivalence as well (e.g., conceptual, item, operational, and measurement), as Herdman, Fox-Rushby, and Badia, (1997) suggested.

Among several already-translated versions of ECRS reviewed for this study, one was found that did not have a verified semantic equivalence (Jeong, Choi, & Gang, 2000). Nevertheless, the researchers use the adapted version under the assumption that it was semantically equivalent. Some researchers (Cho, 2008; Kim et al., 2011) have used quantitative methods to verify their instrument. First, Cho (2008) used DLSH to assess semantic equivalence. Though her instrument was equivalent to the English version in retest reliability and DLSH reliability, Cho (2008) reported that the adapted version of ECRS was not equivalent in terms of internal consistency. Beyond equivalence issues, a small bilingual sample (n = 26) and criterion sample (n = 38) suggested that another translation and round of verification were necessary. Second, Kim et al. (2011) used confirmatory factor analysis and item response theory to test the psychometric properties of a translated Korean ECRS-R. They found that the translated ECRS-R was influenced by response set factors (positively or negatively worded items) and had linguistic issues when the researchers changed the terms "romantic partners" and "partners" to "others" in the adapted version. Finding an adapted version of ECRS that had good equivalence proved impossible.

The Current Study

The purpose of this study was to complete a new adaptation of the ECRS into Korean using the DLSH method. Essentially, this method required testing a series of null hypotheses asserting that the English language and Korean language versions of the instrument *did not* differ significantly. The following hypotheses were tested, but they were phrased in the direction of the null, that is, with the expectation that there would be no statistically significant differences, except for hypotheses 4a and 5a, which were presented as alternate hypotheses:

1a. The means of the English items will not differ significantly from the Korean items.

1b. The two-factor model of the English and Korean versions will show good model fit.

2. Correlations in the bilingual sample between the half of the items in Korean and the half of the items in English will not differ significantly from the correlations in a criterion sample between the half of the items in Korean and the half of the items in English.

3. The internal reliability of the DLSH version will not differ significantly from the internal reliability of the criterion sample.

4a. The retest reliability (two-week interval) of the bilingual sample will be a positive correlation between the first and second administrations. 4b. The retest reliability (two-week interval) of the bilingual sample will not be significantly different between the English items and the Korean items within a subscale.

5a. Social self-efficacy, a measure of construct validity, will be negatively correlated with the ECRS Anxiety subscale, and Fear of Intimacy, another measure of construct validity, will be positively correlated with the ECRS Avoidance subscale. 5b. Correlations with the English language construct validity measures (Social Self-Efficacy and Fear of Intimacy) will not differ significantly between the Korean language items and the English language items.

Given our theoretical understanding of cultural studies discussed in the literature review, the instrument *was* expected to differ semantically. In the context of multiculturalism, hypotheses 2, 3, and 5 addressed how great the discrepancy in correlation or internal reliability between the Korean bilingual and American criterion samples might be. Addressing the means and correlations *within* the Korean bilingual samples, hypotheses 1 and 4 proposed that the instrument *would not* differ semantically.

Chapter 2

Method

Participants

Bilingual sample. A total of 273 Koreans who scored 80 or higher on the Test of English as a Foreign Language (TOEFL) responded to the study. After screening the data, using the process explained in the data screening analysis section, 204 cases were retained for analysis. This study collected data not only in the United States but also in Korea in order to recruit a large number of bilingual participants. The 204 participants from both samples consisted of 137 women (67%) and 67 men (33%). The mean age was 27.12 years (*SD* = 5.64 years, range = 19–55). Regarding romantic relationship status, 122 (60%) were currently in a "serious" romantic relationship, and 81 (40%) were not in a "serious" romantic relationship. As part of this designation, the participants were asked to give their own definition of "serious" relationship. Participants reported that their longest "serious" romantic relationship was 33.88 months (*SD* = 34.23 months, range = 0–241). Twenty-two participants (11%) reported that they had never been in a "serious" romantic relationship.

A cutoff score of 80 on the TOEFL was used to define bilingual frequency, the same score required to attend the University of Tennessee. The mean TOEFL score was 98.11 (*SD* = 12.17, range = 80–120).

Criterion sample. For comparison with the Korean bilingual sample, 399 undergraduate samples from Mallinckrodt and Wei (2004) were used. Students in general psychology classes from a Midwestern university participated. The criterion samples consisted of 239 women (60%), 153 men (38%), and 7 who did not report gender (2%). The mean age was 19.83 years (*SD* = 2.26, range = 18–42).

Instruments

Adult Attachment – English version. The Experiences in Close Relationships Scale (ECRS; Brennan et al., 1998) was developed using a factor analysis of more than 482 items taken from the most frequently used self-report adult attachment instruments. This analysis yielded two orthogonal factors: Anxiety and Avoidance. Each subscale contains eighteen 7-point, Likert-type items that are partially anchored (1 = *Disagree Strongly*, 4 = *Neutral/Mixed*, 7 = *Agree Strongly*). Higher scores indicate greater levels of Anxiety or Avoidance. Based on a sample of college students, Brennan et al. (1998) reported internal consistency reliabilities (coefficient alpha) of .94 and .91 for the Avoidance and Anxiety subscales, respectively, and evidence of validity through correlations in expected directions with other measures of adult attachment and sexual feelings. In the current study, internal consistency reliability (coefficient alpha) was .73 and .80 for the Avoidance and Anxiety subscales, respectively.

Social Self-Efficacy Subscale. The Social Self-Efficacy (SSE) subscale from the Self-Efficacy Scale (Sherer et al., 1982) was used as the original English version in the current study. High scores on this subscale indicate a tendency to take initiative and persist in efforts to make new friends, as well as the belief that one's own personal abilities are a decisive factor in acquiring current friends. This subscale was selected to assess construct validity of the ECRS Anxiety subscale. Its 5-point Likert-type items ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In this study, internal consistency reliability (coefficient alpha) was .56. Mallinckrodt and Wei (2004) reported correlations between the SSE and the ECRS Anxiety subscale of -.26 using their American college student sample. (Correlation with the ECRS Avoidance subscale was -.29).

Fear of Intimacy Scale. The Fear of Intimacy Scale (FIS; Descutner & Thelen, 1991) was used as the original English version. FIS was selected to assess construct validity for the current study because persons with high attachment avoidance tend to fear close personal communication. Mallinckrodt and Wei (2004) reported correlations between FIS and the ECRS Avoidance subscale of .67 for 9 Chinese items and .69 for 9 English items using their Chinese bilingual sample. (Correlation with the ECRS Anxiety subscale was .11 for 9 Chinese items and .45 for 9 English items). Thus, significant positive correlations were expected between FIS scores and the ECRS Avoidance subscale. FIS contains 35 items using a 5-point scale ranging from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*). The authors reported internal reliability (coefficient alpha) of .93. In the current study, internal consistency reliability (coefficient alpha) was .94.

Back-Translation Procedure

Two previous Korean versions of ECRS (Cho, 2008; Jeong, Choi, & Gang, 2000) were examined by the PI, a doctoral student in counseling psychology who is fluent in English and Korean. The discrepancies between the two Korean versions primarily included word choice for "partner" and translation styles, one being primarily "word-for-word" (Jeong et al., 2000), the other conveying a sense of the original (Cho, 2008). In the current project, the version developed by Cho (2008) provided the baseline translation but was adjusted to account for discrepancies with the version developed by Jeong et al. (2000). First, one key word from the original English version, "partner," was translated as "lover" for the current study, based on the way Cho (2008) explained how respondents should think about this term. This elaboration statement in the instrument instructions translates to English as follows: "The following statements are about how you feel about your relationship with someone you love (your spouse,

boyfriend, girlfriend, or lover)." This step was necessary because there is no word that represents "romantic partner" or "partner" in Korean. Instead of finding one single word to capture the English meaning, a description of "partner" using several synonyms was provided in the instructions, as described above. Second, seven items (5, 12, 15, 16, 20, 30, and 34) from Cho (2008) were adjusted to provide a better adaption of the English wording. See appendix A for further description of the modifications made to each item.

This first draft of the new Experiences in Close Relationships Scale – Korean (ECRS-K) was then back-translated by three bilingual Koreans. The back-translation and original English versions were compared by the second author, who has considerable experience in adult attachment research. Mismatch between the back-translated English version and original English version of ECRS was observed in four items (5, 15, 16, and 34), which were revised after careful consideration. For example, ECRS item 34, "When romantic partners disapproved of me, I feel really bad about myself" was back-translated differently by three different translators from the first Korean version: (a) "I feel I am not good enough when my significant other thinks so," (b) "When my love thinks I'm terrible, I feel I am really terrible," and (c) "I have low self-esteem when my significant other does not desire me as much he or she used to." Because the back-translated statements did not include the meaning of "disapprove," another Korean version of item 34 was written to emphasize the idea of disapproval. The three back-translations of this version were (a) "I tend to have low self-esteem when my significant other criticizes me," (b) "When my love criticizes me so much, I really feel like I am a loser," and (c) "When I encounter brutal criticism from my significant other, I feel I am not good enough." After this process, ECRS-K item 34 was judged to be equivalent to the English version.

The adjusted Korean items (5, 15, 16, and 34) underwent the translation/back-translation process described above. As a result, a semantically equivalent Korean version of ECRS was established. After this qualitative adjustment, the quantitative analyses were conducted.

Data Collection Procedure

The test-retest sample was collected from two different sources. Part of the sample was gathered from Korean international students at the University of Tennessee and Purdue University. Students were contacted using e-mail addresses from Korean Student Association listservs at these universities and asked to participate in the study. Students who were interested in participating replied by email to the principle investigator (PI). The PI then sent a link to the survey hosted on the Qualtrics web site. Students were rewarded a $15 Amazon.com gift card upon completion of the second survey. Using this method, a total of 37 Korean international students participated. However, because the sample size lacked sufficient statistical power, the PI contacted Koreans living in Korea with a minimum TOEFL score of 80 to gather additional participants. To recruit this part of the sample, a letter was posted to various online groups (e.g., www.gohackers.com). In addition, participants who had already completed the survey forwarded the recruitment letter to other Koreans who might be interested in this study (i.e., snowball technique). Data collection followed the same procedure with the exception of the incentive. Native Koreans earned a $5 (the equivalent of 5,000 won in Korean currency) e-gift card upon completion of the second survey; this amount was determined after considering the cost of living in Korea. The total test-retest sample consisted of 30 women (64%) and 17 men (36%). The mean age was 29.59 years (*SD* = 4.48 years, range = 20–39).

In addition to the test-retest sample, the study collected data from 157 Koreans who were asked to complete only the pre-test survey. The recruitment email containing the survey's URL

was distributed in four ways. First, 71 Korean Student Associations and leaders in the United States were contacted and asked to distribute information about the current study though their listservs or Facebook pages. The request was sent on four occasions: November 12, 2015; January 5, 2016; February 3, 2016; and May 9, 2016. Second, a recruitment message was posted on Yahoo groups, Reddit groups, and Facebook pages for Koreans in the United States. Third, the PI contacted representatives of several organizations (e.g., Counseling Psychology, Social Work, Consumer Science, Advertisement) and asked them to distribute the recruitment email through their listservs. Fourth, an advertisement targeting Koreans in the United States was run on Facebook; that is, only Koreans living in the United States were able to see the advertisement, which contained a picture of the Korean national flag and a short recruitment message. Interested individuals clicked on the advertisement and were directed to the Qualtrics web site. The advertisement reached 61,310 Koreans; 1,474 of them clicked the link. The cost of running the Facebook advertisement from May 16, 2016 to June 20, 2016 was $442.34. Participants were given the opportunity to enter a raffle for one of four $50.00 Amazon.com gift cards. Upon completion of data collection, winners were chosen, notified, and given their gift certificates. The second sample consisted of 107 women (68%) and 50 men (32%). The mean age was 26.39 years (*SD* = 5.76 years, range = 19–55).

The first administration contained demographic items as well as the following English language measures to establish validity of the translated measure: (a) Social Self-Efficacy, (b) Fear of Intimacy. In addition to validity measures and demographic items, the survey contained the DLSH instrument, which consists of 36 items, 18 items from the English version of ECRS and 18 items from ECRS-K.

Two different forms were used for the DLSH procedure, each containing all 36 ECRS items. Form A contained the first 18 items from the English language version and the last 18 items from the Korean language version. Form B counterbalanced the order of the two languages. In the first administration, the bilingual Korean participants were randomly assigned one of the two forms: Form A (the first half of the English version and the second half of the Korean version) or Form B (the first half of the Korean version and the second half of the English version). Two weeks later, the participants were sent the same form to complete again.

The second survey presented only the DLSH version of ECRS instrument without the validity measures. The link to the second survey was distributed by email fourteen days after the first survey was completed. The online instructions asked participants to create and save a 6-character code label that they were able to remember but could not be used by the research team to identify them personally. Each of the two surveys was labeled the same way, allowing us to collate the date while maintaining anonymity. Upon completion of the retest survey, Korean international students received a $15 Amazon.com gift card, and Korean living in Korea received a $5 (the equivalent of 5,000 won in Korean currency) e-gift card. The second survey concluded with a third Qualtrics link where the participants entered a "password" (e.g., abcd1234) given at the end of the survey for redeeming their gift. They were told that in order to receive the reward, they had to enter the password within three hours of completing the second survey. This short time frame prevented students who did participate in the study from passing the link and password along to friends who had not participated. Accordingly, we changed the gift certificate redemption password 2-3 times per day. When redeeming the gift, participants had to provide their email address and the time-sensitive password displayed at the end of the second survey. Each day, incentives were distributed to students who entered information and a correct time-

sensitive password into the third database. Gift "certificates" were not delivered in person; instead, participants were sent, by return email, an authorization code that they could use to redeem their gift online.

The surveys did not contain any personally identifying information but were labeled only with a user-selected identifier to the match the first and second administration. When a participant returned a password that had expired more than six hours prior, he/she was sent an email message requesting his/her code label to verify participation. If the code label was valid, the gift was issued with no further questions asked. After verification and delivery of the gift card, this communication thread was destroyed so that the participant's data returned to a fully anonymous state. This procedure resulted in no incentive being issued to students who completed only the first survey. The informed consent document stated that participants could discontinue at any time and skip any item that they preferred not to answer, but they had to read all the way through to the last question of the second survey before discovering how to receive their gift.

The Korean sample who completed the pre-test survey only were asked to complete demographic items as well as the following English language measures to establish validity of the translated measure: (a) Social Self-Efficacy and (b) Fear of Intimacy. In addition to the validity measures and demographic items, the survey contained the DLSH version of ECRS, the same one used in the test-retest survey. Pre-test participants were randomly given one of the two forms (i.e., Form A or Form B) using a random assignment parameter that was set by Qualtrics. At the end of survey, pre-test participants had the opportunity to enter a raffle for one of four $50.00 Amazon.com gift cards. Upon completion of data collection, winners were chosen, notified, and given their gift certificates.

Chapter 3

Results

Data Screening

Analysis was conducted using SPSS for Mac version 22 and AMOS for Window version 22. Data-cleaning procedures were followed. Completed surveys were received from 273 Koreans; however, a total of 69 surveys were dropped. Forty surveys were eliminated because responses to more than 20% of the items were missing. We did not include items to check for random or inattentive responses, but Qualtrics does record the time that a participant started and stopped responding to each survey. Based on these time-interval data, thirteen other surveys were eliminated because time spent filling them out was less than 5 minutes (less than 2.5 seconds per item). In addition, eleven other surveys were removed because they required more than 3 hours to complete (in some cases, several days). This long interval compromised internal consistency analyses. Two surveys were excluded because the participants were younger than 18 years old. Finally, 23 surveys were deleted because the participant did not report their TOEFL score or meet the minimum TOEFL score. For the test-retest sample, five surveys were removed because they responded to their test and retest survey on the same day.

Tests of Semantic Equivalence

Power analysis. Because recruiting bilingual Korean participants was difficult and the sample size was relatively small, a power analysis was conducted using *t*-tests to determine the necessary sample size. In order to achieve approximately 80% power, which is an adequate level, α was set to .05, and a small effect size (d = .20) was entered for *t*-tests. The result indicates that the ideal sample size was at least 199. A post-hoc power analysis, which is typically performed after a study, was conducted to calculate the statistical power of the current

study. Given 100 participants, $\alpha = .05$, and a small effect size ($d = .20$), the statistical power was .51. For the second administration with 26 participants, the statistical power dropped to .17.

Mean differences. Data analysis for DLSH followed the same steps suggested by Mallinckrodt and Wang (2004) to verify semantic equivalence quantitatively. The first hypothesis proposed that the means of the English items would not differ significantly from the means of the Korean items. Within-subject *t*-tests were conducted to compare mean differences between the English items and the Korean items within a subscale (i.e., Avoidance or Anxiety). This analysis included 204 Korean samples: (a) the test-retest data of Korean international students in the United States ($n = 47$) and (b) the pre-test data of Koreans ($n = 157$) from either the United States or Korea. All participants ($n = 204$) completed the pre-test survey and only test-retest participants ($n = 47$) answered the retest survey. For example, the mean of the nine English Avoidance items presented in the first half of Form A was compared with the mean of the nine Korean Avoidance items presented in the second half of Form A (the Avoidance subscale of ECRS contained 18 items). In this study, there were two different versions of language (English and Korean), administration (test-retest survey), and subscale (Avoidance and Anxiety subscale of ECRS). The means and standard deviations of the eight pairs are shown in Table 1.

In the first administration, the only significant difference between the two language versions was found in the Avoidance subscale from Form B, $t\,(103) = -5.97$, $p < .001$. Similar results were found in the second administration. The two language versions from both Form A and Form B were not significantly different, except the Avoidance subscale from Form B, $t\,(25) = -2.80$, $p < .01$. Thus, the first hypothesis was partially supported.

Confirmatory factor analysis (CFA). Considering the fact that *t*-tests have often been criticized for their sample size, CFA was conducted in order to test the measurement equivalence of the Korean and English versions. Scholars recommend using between 5 and 10 participants per observed variable (Grimm & Yarnold, 1995). Therefore, the current study had an adequate sample size for CFA. CFA models in the figures are unidimensional models. They indicate that the scores on the English and Korean versions arise from a single latent variable Avoidance or Anxiety adult attachment. If the model fit indices were *not* good, the evidence would suggest that the two versions of the subscale were not semantically equivalent. Eight different CFAs were conducted to test how well the unidimentional model of the English and Korean versions of ECRS fit. See Table 2 for detailed results.

For the first administration, four pairs of CFAs were conducted. First, a CFA using 9 English items and 9 Korean items from the Avoidance subscale from Form A was conducted to test model fit. Kline (2005) recommended minimum fit index values. Regarding goodness-of-fit, the minimum values for each index are the following: statistically insignificant chi-square, a 90% confidential interval for RMSEA, and a cut-off point of .95 for CFI (Worthington & Whittaker, 2006). The results showed a good model fit, χ^2 (1) = .29, p = .59, CFI= 1.00, RMSEA= .00 (90% CI = .00 - .22), p-close > .05. Second, a CFA using 9 English items and 9 Korean items from the Anxiety subscale from Form A was conducted to test model fit. The results showed a good model fit, χ^2 (1) = 1.49, p = .22, CFI= 1.00, RMSEA= .07 (90% CI = .00 - .29), p-close > .05. Although the RMSEA for this model is .07 that is higher than recommendation for a good model fit (Hu & Bentler, 1999), the probability value for the chi-square test was above .05. Therefore, the model fit well according the tests of fit. Third, a CFA using 9 English items and 9 Korean items from the Avoidance subscale from Form B was

conducted to test model fit. The results showed a good fit, χ^2 (1) = 1.22, p = .27, CFI= 1.00, RMSEA= .05 (90% CI = .00 - .27), p-close > .05. Although there was a significant difference between the two language versions was found in the Avoidance subscale from Form B in within-subject *t*-tests, the same result was not found in a CFA. Fourth, a CFA using 9 English items and 9 Korean items from the Anxiety subscale from Form B was conducted to test model fit. The results showed a good model fit, χ^2 (1) = 2.07, p = .15, CFI= .98, RMSEA= .10 (90% CI = .00 - .30), p-close > .05. Although the RMSEA for this model is .10 that is higher than recommendation for a good model fit (Hu & Bentler, 1999), the probability value for the chi-square test was above .05. Therefore, the model fit well according the tests of fit.

For the second administration, another four pairs of CFAs were conducted. First, a CFA using 9 English items and 9 Korean items from the Avoidance subscale from Form A was conducted to test model fit. The results showed a good model fit, χ^2 (1) = .16, p = .69, CFI= 1.00, RMSEA= .00 (90% CI = .00 - .44), p-close > .05. Second, a CFA using 9 English items and 9 Korean items from the Anxiety subscale from Form A was conducted to test model fit. The results showed a good model fit, χ^2 (1) = 0.08, p = .78, CFI= 1.00, RMSEA= .00 (90% CI = .00 - .39), p-close > .05. Third, a CFA using 9 English items and 9 Korean items from the Avoidance subscale from Form B was conducted to test model fit. The results showed poor fit, χ^2 (1) = 2.20, p = .14, CFI= .95, RMSEA= .22 (90% CI = .00 - .63), p-close > .05. The result for the CFA was similar to the significant difference between the two language versions in the Avoidance subscale from Form B in within-subject *t*-tests. Not only the RMSEA value from CFA but also the *t*-test results suggested poor model fit. Fourth, a CFA using 9 English items and 9 Korean items from the Anxiety subscale from Form B was conducted to test model fit.

The results showed a good model fit, χ^2 (1) = 0.56, p = .46, CFI= 1.00, RMSEA= .00 (90% CI = .00 - .48), p-close > .05.

DLSH reliability. The second hypothesis proposed that correlations in the bilingual samples between the Korean items and the English items would not differ significantly from the correlations in the criterion samples between all of the English items (i.e., DLSH reliability). Pearson product-moment correlations were conducted between the Korean items and the English items within a subscale. This analysis included 204 Korean samples. The criterion samples included 399 American college students used by Mallinckrodt and Wang (2004). The correlations they obtained are shown in the fifth column of Table 3. Fisher's r to Z transformation (see http://vassarstats.net/rdiff.html for calculation) was used to test semantic equivalence between the correlation coefficients of the bilingual samples and the criterion samples. One-tailed tests are appropriate because the criterion sample's correlation is expected to be higher than the mixed language sample's correlations. Unexpectedly, there were significant differences between the bilingual samples and the criterion samples: the Avoidance subscale from Form A, z = -6.29, p < .001, the Avoidance subscale from Form B, z = -5.80, p < .001, and the Anxiety subscale from Form B, z = -4.15, p < .001. However, the bilingual samples had no statistically significant differences from the criterion samples in the Anxiety subscale from Form A, z = -1.55, p = .06. According to the results, the second hypothesis was not supported.

Regarding post-hoc power analysis of DLSH reliability, given α = .05, effect size q = -.71, bilingual samples (n = 100), and criterion samples (n = 399), the output showed that the statistical power of the Avoidance subscale from Form A was about 1.00. Note that effect size (q = -.71) was calculated from two correlation coefficients. For the Anxiety subscale from Form

A, the statistical power was 0.46, and effect size *q* was -0.18. For the Avoidance subscale from Form B, the statistical power was 1.00, and effect size *q* was -0.65. For the Anxiety subscale from Form B, the statistical power was 0.99, and effect size *q* was -0.46. These results suggest that due to the large number of participants, the DLSH reliability had good statistical power to detect differences; therefore, other researchers should be able to replicate the findings in future studies.

Internal reliability. The third hypothesis proposed that internal reliability of the DLSH version would not differ significantly from the internal reliability of the criterion sample. In order to measure internal consistency, coefficient alphas were calculated using the Korean Avoidance items and the English Avoidance items from the bilingual participants. This analysis included 200 Korean samples. The criterion samples included the coefficient alphas of the 18 Avoidance items from Mallinckrodt and Wang (2004). Comparisons of the two groups of alpha coefficients were conducted using the Cocron R procedure (see http://comparingcronbachalphas.org/ for calculation). The same analyses were repeated for the Anxiety items. Results are shown in Table 4. All four coefficients (i.e., both scales from both forms) were greater than .80, indicating good reliability. However, not only were the alpha values of the bilingual samples somewhat lower than the criterion samples, but statistically significant group differences were also found between the corresponding alpha values for the bilingual and criterion samples, except for the Anxiety subscale from Form A. Again, there were significant group differences between the bilingual and the criterion samples for the Avoidance subscale from Form A, $\chi^2 = 10.17$, $p < .001$, the Avoidance subscale from Form B, $\chi^2 = 40.29$, $p < .001$, and the Anxiety subscale from Form B, $\chi^2 = 9.14$, $p < .001$. The third hypothesis was not supported by the results.

Test-retest reliability. The fourth hypothesis proposed that the retest reliability (two-week interval) for the bilingual participants would not be significantly different between the English items and the Korean items. Pearson correlations were conducted to analyze retest reliability between the first and second administration. This analysis only included the test-retest data of the Korean international students (n = 47). Table 5 reports that the first and second administrations were strongly positively correlated. A two-tailed r to Z test was conducted to determine any statistically significant differences in retest correlations between the English and the Korean items within a subscale. There were no statically significant differences in either subscale from Form A: Avoidance, z = -0.95, p = .34, Anxiety, z = -1.00, p = .32. The same was found for Form B: Avoidance, z = -0.13, p = .90, Anxiety, z = 0.51, p = .61. The fourth hypothesis was supported by the results. The bilingual sample showed temporal stability across an 7–28 day interval (M = 14.49, SD = 4.24) within the DLSH version, except for the Avoidance English items from Form A. In addition, there were no statistically significant differences between the English and Korean items during a 7–28 day interval.

Construct validity. The fifth hypothesis proposed that Social Self-Efficacy, a measure of construct validity, would be negatively correlated with the ECRS Anxiety subscale and that Fear of Intimacy, another measure of construct validity, would be positively related with the ECRS Avoidance subscale. Furthermore, correlations for the English language construct validity measures (Social Self-Efficacy and Fear of Intimacy) would not differ significantly between the Korean language items and the English language items. Pearson correlations were calculated to analyze construct validity. This analysis included all 204 Korean samples.

The avoidance subscale of ECRS was expected to have significantly positive correlations with the Fear of Intimacy scale but not with the Social Self-Efficacy subscale. At the same time,

the Anxiety subscale of ECRS was expected to have a significantly negative correlation with the Social Self-Efficacy subscale but not with the Fear of Intimacy scale. In this study, mixed results were found, as shown in Table 6. In terms of Fear of Intimacy, as expected, there were positive correlations between the Avoidance subscale and Fear of Intimacy in Form A and Form B. No significant differences in strength of association with Fear of Intimacy emerged. Unexpectedly, the Anxiety subscale from both forms showed statistically significant correlations with Fear of Intimacy.

Contrary to expectation, the Anxiety subscale was significantly positively correlated with Social Self-Efficacy, with the exception of the 9-item Korean Anxiety subscale from Form A. No significant differences in strength of association with Social Self-Efficacy emerged. Unexpectedly, the Avoidance subscale from both forms exhibited statistically significant correlations with Social Self-Efficacy. The fifth hypothesis was partially supported in that both measures of construct validity, Fear of Intimacy and Social Self-Efficacy, showed equivalent correlations across the Korean and English items. However, the extent to which the validity measures, Social Self-Efficacy and Fear of Intimacy, relate to the underlying theoretical concepts of the Avoidance and Anxiety subscales remains unverified.

Follow-Up Analysis

After reviewing the DLSH reliability and internal reliability, the Avoidance subscales from both forms revealed a consistent problem with equivalence. Coefficient alpha analysis of individual items was conducted to check for items with negative item-total correlations. Two items from the Avoidance subscale from Form B showed negative item-total correlations: item 3 = -.41 (“I am very comfortable being close to romantic partners”) and item 7 = -.59 (“I get uncomfortable when a romantic partner wants to be very close.”) Note that those two items from

the Avoidance subscale from Form B were presented in Korean. Considering the fact that the items themselves stay in the same order on both forms, those two items from the Avoidance subscale from Form A were presented in English. This finding is not surprising. Cho (2008) reported stylistic consideration as a possible translation issue about the item containing "I feel uncomfortable…" Lee et al. (2008) also reported that item 7 ("I get uncomfortable when others want to be very close") was dropped from the Avoidance subscale because it might have been measuring a different construct from the other items in the Avoidance subscale. Given these prior concerns, we decided to delete those two items and conduct another set of analyses. Using the same types of procedures and participants as the initial analysis, we hoped to identify an improvement in equivalence, but because only two items from the Avoidance subscale were deleted, the follow-up results indicated no change for the Anxiety subscale because the items were not changed.

First, within-subject *t*-tests were conducted to compare the means between the English items and the Korean items in the Avoidance subscale. After dropping the two problematic items, the means of the English items did not differ significantly from the Korean items (see Table 7). The first hypothesis was supported in this follow-up analysis, for ECRS-K did not differ from ECRS within the bilingual sample in either the first or second administration.

Second, in terms of the DLSH reliability, correlations in the bilingual sample between the seven English Avoidance items and the nine Korean Avoidance items from Form A (or between the seven Korean Avoidance items and the nine English Avoidance items from Form B) were not equivalent to the correlations in the criterion sample. As reported above, only the Anxiety subscale from Form A was equivalent to the criterion sample in terms of the DLSH reliability (see Table 8). The second hypothesis was still not supported after the follow-up analysis. The

findings suggest that the correlations in the Avoidance subscale between the two language versions were different from the correlations between the English-only items after dropping the two problematic items.

Third, regarding internal reliability, no improvement was found, except that the Avoidance subscale from Form B increased from .84 to .90. Coefficient alphas of the Avoidance subscale from the bilingual sample were still not equivalent to coefficient alphas from the criterion sample: Form A, $\chi^2 = 9.91$, $p < .001$, Form B, $\chi^2 = 10.14$, $p < .001$. Table 9 reports the results of Cronbach's alpha. Again, even after dropping the two problematic items, the third hypothesis was not supported.

Fourth, retest reliability after follow-up analysis is reported in Table 10. Retest reliability of the English Avoidance items from Form A was expected to improve. However, contrary to expectation, the correlation of the Korean Avoidance items from Form A dropped from .53 to .48.

After dropping the two problematic items, the correlation of the Korean Avoidance items from Form B improved from .70 to .80. Similar to the initial analysis, the results demonstrate temporal retest reliability of the bilingual sample between the English and Korean subsets, supporting Hypothesis 4.

Lastly, construct validity analysis indicates that the fifth hypothesis was still partially supported. As expected, there were positive correlations between the Avoidance subscale from both forms and the Fear of Intimacy scale (see Table 11). No significant difference in strength of association between Fear of Intimacy and the Avoidance subscale emerged. Fear of Intimacy showed a strong positive correlation with both the Korean and the English Avoidance items. Unexpectedly, the Avoidance subscale from both forms exhibited statistically significant

correlations with Social Self-Efficacy. Results for the Anxiety subscale remained the same in the follow-up analysis because the items were not changed.

Chapter 4

Discussion

One of the most frequently used adult attachment measures in current research is ECRS. ECRS has been translated into many different languages. However, many researchers have pointed out conceptual and cultural equivalence issues in the adapted versions (Cho, 2008; Kim et al., 2011; Lee, Grossman, & Krishnan, 2008; Mallinckrodt & Wang, 2006). The characteristics of adult attachment can differ from one culture to another (Kim et al., 2011; Lee, Grossman, & Krishnan, 2008; Mallinckrodt & Wang, 2006). If these cultural differences are not considered, some items might be misunderstood by participants (Beck et al., 2003; Mallinckrodt & Wang, 2004). While an adapted measure might yield reliable scores, it might have poor content validity. The aim of this study was to verify the semantic equivalence of a Korean version of ECRS using quantitative methods.

After translating ECRS from English to Korean, analyses indicated ECRS-K exhibited high internal consistency and appropriate test-retest reliability over a 2-week period. However, in terms of overall equivalence with ECRS, two of the Avoidance items did not perform as expected. The two versions of the Avoidance subscale were inconsistent when the bilingual participants responded to the items in their native language first. In other words, the bilingual Korean participants who were given the first half of the items in Korean and the rest in English exhibited significantly higher mean scores on the Korean Avoidance items than the English Avoidance items. Furthermore, this pattern was found not only in the first but also in the second administration. Given the bilingual participants of the current study, it has a 51% chance of obtaining a statistically significant result using a two-tailed test with alpha set at the conventional level of .05. When using CFA instead of within-subject *t*-tests, the semantic equivalence of the

DLSH version of ECRS was supported, except for the Avoidance subscale from Form B in the second administration.

The DLSH reliability method was designed to provide empirical evidence of the semantic equivalence between an adapted version of an instrument and the original version. The bilingual participants responded similarly to the English items and the Korean items. The correlations between the Korean items and the English items were expected to be somewhat lower than the correlations between the English language items; however, the correlations were significantly lower, calling into question the semantic equivalence of ECRS-K. The DLSH reliability method exhibited good statistical power due to a large number of participants from both bilingual and criterion samples. Therefore, this result has an increased chance of detecting a true effect of the semantic nonequivalence of ECRS-K.

The internal reliability of the bilingual sample was above .80, which is very good reliability, generally speaking. However, when comparing the DLSH version of ECRS and the original version of ECRS, only the coefficient alpha of the Anxiety subscale from Form B was equivalent to the corresponding items from the all-English version. After conducting item-total correlation tests to discover items that were not consistent to the items in a subscale, only the Avoidance subscale from Form B showed negative item-total correlations: item 3 (item-total correlation = -.41, “I am very comfortable being close to romantic partners,” reverse-scored item) and item 7 (item-total correlation = -.59, “I get uncomfortable when a romantic partner wants to be very close”). Participants with lower scores on those two questions scored higher on the Avoidance subscale. This unexpected result could be attributed to a couple of factors: mis-keyed items or ambiguous wording. We checked carefully for reverse coding errors but did not find any. Therefore, the unexpected result might be evidence of a language style issue.

These two items were presented in Korean on the Avoidance subscale from Form B and were presented in English on the Avoidance subscale from Form A, considering the fact that the items themselves stay in the same order on both forms. However, the bilingual participants did not show the same tendency when the two items were presented in English. Therefore, the wording of the two Korean items might have revealed a unique language issue. Note that these items were presented in Korean to the participants who were given Form B. However, these were described in English for readers in this paper.

A literal translation is insufficient because the original meaning behind certain items might not be reflected in a word-for-word transfer. Both Korean items contained the word "comfortable." Similar to the usage of the word "comfortable" in English, the word "comfortable" in Korean means physical ease and relaxation in a particular environment. It also conveys an emotional sense of ease and relaxation. The English word "comfortable" can be translated to its Korean counterpart; however, it might not capture the emotional implications of the original English word. For instance, instead of word-for-word translation, item 3 ("I get uncomfortable when a romantic partner wants to be very close") could be translated into Korean as "I am reluctant when a romantic partner wants to be very close."

Three other Korean Avoidance items contained the word "comfortable," and the translation was the same across all of the items that included the word "comfortable": "I don't feel comfortable opening up to romantic partners" (item 9); "I feel comfortable sharing my private thoughts and feelings with my partner" (item 15, reversed item); "I feel comfortable depending on my romantic partner" (item 29; reversed item). Although those items did not show negative item-total correlations, the English word "comfortable" should be more carefully translated into Korean the future studies.

Second, regarding the language style, item 7 ("I get uncomfortable when a romantic partner wants to be very close") has a negative meaning but is phrased in positive terms. Cho (2008) considered translating item 7 from "I get uncomfortable . . ." to "I do not feel comfortable . . ." because the latter seemed more natural in Korean; however, the original form, "I get uncomfortable . . ." was preserved to avoid any discrepancy between negative and positive statements (Cho, 2008). In the current study, 27 items, including items 3 and 7, were identical to Cho (2008), who was careful to mention this stylistic consideration as a possible translation issue. Lee et al. (2008) dropped item 7 ("I get uncomfortable when others want to be very close") from the Avoidance subscale because it seemed to measure a different construct from the other items in the same subscale. One possible reason that item 7 has been problematic in ECRS-K is that bilingual participants might not perceive the expressions "I get uncomfortable" and "I don't feel comfortable" as parallel when those were written in Korean. Accordingly, translating the item 7 as "I don't feel comfortable" to the Korean version might make item 7 more reliable.

Retest administration after a two-week interval showed that there was no statistical difference in temporal stability on the DLSH version of ECRS. In addition, the strength of test-retest correlation between the English and the Korean subsets within the subscale were not different in bilingual samples. Thus, the bilingual sample showed appropriate temporal stability across a two-week interval.

In terms of construct validity, this study expected that Social Self-Efficacy would be negatively correlated with the DLSH version of the ECRS Anxiety subscale; however, it exhibited a significantly positive correlation instead. Mallinckrodt and Wang (2004) reported no significant correlation between the Anxiety subscale and Social Self-Efficacy for Chinese

bilingual participants. Wang and Mallinckrodt (2006) pointed out that the concept of secure adult attachment can have different meanings in various cultures. Taiwanese perspectives of ideal adult attachment revealed higher anxiety and higher avoidance than U.S. perspectives when assessed using the Experiences in Close Relationships – Chinese scale (ECRS-C), which was developed based on Western concepts of adult attachment.

Similar to ECRS-C, ECRS-K might tap into different aspects of adult attachment for Koreans. Theoretically, individuals with high levels of Anxiety attachment tend to have a negative working model of self so that they are less likely to believe in their ability to influence the quality of their relationships. Therefore, we expected a negative correlation with the Social Self-Efficacy subscale, which assesses effort and perceived ability to make new friends (Mallinckrodt & Wang, 2004). However, Korean participants with higher levels of Anxiety attachment reported that they were confident in their ability to make new friends. This result shows that Anxiety adult attachment for the Korean participants was not related to low social self-efficacy or low self-esteem. Although adult attachment is based on the theory that attachment-related functions will be transferred from parent to romantic partners and peers, Koreans might have a different relational template for romantic relationships than for friendships. Considering cultural orientation, Koreans tend to perceive themselves as part of a significant whole, especially the family, so that attachment to some figures might be less likely to transfer to attachment to other figures (You & Malley-Morrison, 2000).

Significant positive correlations were expected between scores on the Fear of Intimacy scale, another construct validity measurement, and scores on the DLSH version of the ECRS Avoidance subscale. As expected, the Avoidance subscale demonstrated equivalent correlations

across the English and Korean language versions. Unexpectedly, Fear of Intimacy also showed statistically significant correlations with the Anxiety subscale from both forms.

Why these two construct validity measures, which are known to assess two different aspects of adult attachment in Western cultures, did not show the expected relationships with the DLSH version of ECRS is unclear. One possible explanation can be found in Cho (2008), which also reported an unexpected but significant positive correlation between the Anxiety subscale and Fear of Intimacy. Cho interpreted this finding to mean that Koreans might not have two distinct avoidance and anxiety attachment patterns when ECRS is designed to measure two independent and orthogonal subscales in Western cultures. Koreans might identify themselves somewhere along an adult attachment continuum instead of in one part of a two-dimensional construct. This question about lack of universality was also mentioned by Lee et al. (2008) and Kim et al. (2011), who tested ECRS-R using Rasch model IRT.

Evidence from several studies of adult attachment among Koreans suggests the possibility of unidimensionality. Kim et al. (2011) reported that a two-factor model of adult attachment (Avoidance and Anxiety) did not have good overall fit with their Korean sample. Anxiety and Avoidance single-factor models also resulted poor fit or marginal fit. Kim et al. (2011) suggested the possibility of cultural variation in adult attachment or methodological problems. For example, they found response bias in the Avoidance subscale with 9 reverse-worded items (the Anxiety subscale had only one reverse-worded item). This response bias might indicate confusion or carelessness among the participants, or it might reflect a cross-cultural language problem. Although the response set did not exhibit bias in the source language, the issue did arise in the translated version (Wong, Rindfleisch, & Burroughs, 2003). This

methodological problem suggests that ECRS-K might work better without reverse-worded items, although the language style would then differ from the original.

Another methodological limitation that should take into account in this cross-cultural comparison is the extent to which the ECRS-K items capture the adult attachment construct. Lee et al. (2008) reported that ECRS-R measured levels of anxiety and avoidance adult attachment that were higher than Koreans' level of adult attachment. They found no overlap between personal trait levels (degree of attachment dysfunction) and items with high difficulty levels (higher levels of anxiety and avoidance attachment) in their Korean sample. In the context of adult attachment, ECRS-R items tapped into levels of insecurity that were higher than Koreans typically experience. First, according to the researchers, Koreans might not experience extreme attachment insecurity at all. Second, Koreans might be less likely to report extremes, a type of self-reporting bias. Third, insecure attachment in Koreans might manifest in emotions other than Anxiety or Avoidance.

Follow-Up Analyses

The follow-up analyses were conducted after deleting the two problematic Avoidance items (i.e., items 3 and 7) to test whether the DLSH versions of ECRS worked better. In particular, we expected improvements in the Avoidance subscale from Form B. First, as expected, the English items and the Korean items on both subscales from both forms had equivalent mean scores. While the initial analysis showed a significant difference in mean scores between the English and Korean subsets when the first half of the scale contained Korean items (Form B), dropping two problematic items yielded closer mean scores. Second, the internal reliability of the Korean Avoidance items from Form B increased from .84 to .90. Despite this improvement, dropping items 3 and 7 failed to reduce the discrepancy in Cronbach's

alpha between the DLSH Avoidance items and the English-only Avoidance subscale. DLSH reliability and internal reliability were still not achieved after dropping the problematic two items. Nevertheless, the findings suggest that ECRS-K, overall, is a valid measure of adult attachment for Korean with good test-retest reliability and high internal reliability.

Limitations

Several important limitations in the current study should be noted. First, the bilingual participants of the current study were Koreans who lived either in the United States or in Korea. Although the bilingual participants were screened using a TOEFL cutoff score of 80, this score might not be a sufficient measure of English language proficiency. Even though they were fluent in English according to the TOEFL score, the bilingual participants who had learned English as a second language might not have achieved a command of English that matched their command of their first language.

Second, this study had sampling issues. The size of the bilingual sample was relatively small compared to the larger criterion sample (n = 399), partially due to difficulties in recruiting. The sample for the current study was 204 Koreans, who were randomly assigned either Form A or Form B. For example, the study compared correlations from 100 Korean participants with correlations from 399 American participants. In order to achieve acceptable statistical power, this study should collect at least 199 participants for each Form. The differences in DLSH reliability and internal reliability between the Korean bilingual sample and the American sample might be due to the sample size difference. Furthermore, this study used the criterion sample from Mallinckrodt and Wang (2004). The ten-year gap that separated the data collection for the current study and the criterion sample could be a confounding factor. For example, attachment behavior norms might have changed over that time period.

Third, this study tested how ECRS-K and ECRS were semantically parallel and found some group differences between the bilingual Korean samples and the criterion American sample. However, whether these differences resulted from non-equivalent translation or cultural differences remains unclear.

Fourth, in terms of survey design, all measures used a Likert-type 5 or 7-point scale anchored by *Disagree Strongly* and *Agree Strongly*; however, the Social Self-Efficacy subscale anchors were in reverse order (i.e., *Agree Strongly* to *Disagree Strongly*). Because this difference might have caused confusion in the participants, the Social Self-Efficacy subscale might not have had sufficient discriminant validity.

Conclusions and Implications

The findings of this study open several paths for future research. First, more research is needed using a lager sample of participants who have higher TOEFL scores. Collecting new criterion data from a recent American sample instead of using older data could minimize the impact of time differences.

Second, in terms of construct equivalence, the findings were not in line with other adult attachment studies from Western cultures. Although determining whether the findings were due to cultural differences in adult attachment or methodological issues is difficult, using other construct validity measures to capture culture-specific attachment characteristics instead of Fear of Intimacy or Social Self-Efficacy might prove more effective.

Third, conducting a qualitative study using interviews might shed more light on Korean understandings of attachment. Most researchers look for differences and similarities using adapted instruments that were developed in Western cultures. This quantitative approach might overlook unique conceptions of or attitudes toward intimate romantic relationships.

Fourth, regarding internal reliability, two items on the Avoidance subscale from Form B performed yielded disparate item-total correlations. For this reason, researchers might examine the benefits of excluding those two items. Changing all negatively worded items to their positive equivalents might lead to a better adaptation. One of the cultural differences between Korea and America might how they respond to negatively worded items about relationships.

The implications of this study relate to the use of quantitative methods for verifying semantic equivalence in adapting instruments from English to Korean. The current study analyzed the bilingual sample data using several quantitative methods and found differences typically overlooked by researchers who use an adapted version of ECRS. Most cross-cultural studies use back-translation procedures and believe subjectively that an adapted version of a scale is semantically and culturally equivalent. More recently, researchers have started to analyze measurements using more rigorous statistical methods (e.g., Item Response Theory) and found inconsistence between adapted versions and the original English version of a scale. The current study also found that the Korean version of ECRS, the most widely using adult attachment measurement, has good internal reliability and test-retest reliability alone; however, ECRS-K is not parallel to the English version in terms of internal reliability. In addition, the construct validity of ECRS-K did not provide strong evidence of equivalence. While the findings of the current study suggest that ECRS-K is a valid measure of adult attachment, its semantic equivalence is still in question. Future researchers should address response set factors and consider dropping the two problematic items.

Regarding attachment theory, the findings of this study suggest that ECRS-K might not capture a universal concept of attachment, considering the unexpected correlations between the DLSH version of ECRS and the two construct validity measures. Attachment anxiety and

avoidance might have different meanings in Korean and American cultures. The cultural validity of adult attachment requires more attention. Future researchers might include measures that can capture uniquely Korean ideas of attachment anxiety or avoidance.

In terms of counseling practice, the findings suggest that Korean conceptions of adult attachment might differ from Western conceptions. When therapists work with Korean international students, they need to place cultural difference at the center of their conceptual framework, considering not only what kinds of romantic relationships are culturally appropriate in Korean culture but also the differences between Korean and American conceptions of romantic relationships. Discussing these differences could reduce misunderstanding and help counselors explore the multiple levels of experience their clients might have as international and bi-cultural students.

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Appendices

Table 1. Means and Standard Deviations for Split Halves of the ECRS

Variable		English Language		Korean Language			
	n	*M*	*SD*	*M*	*SD*	*df*	*t*
First administration							
Form A							
Avoidance	100	2.67	1.06	2.63	1.05	99	0.42
Anxiety	100	3.77	1.19	3.77	1.11	99	-0.03
Form B							
Avoidance	104	2.80	1.03	3.26	0.72	103	-5.97***
Anxiety	104	3.68	1.08	3.65	0.97	103	0.46
Second administration							
Form A							
Avoidance	21	2.39	0.94	2.42	0.87	20	-0.23
Anxiety	21	3.44	1.40	3.48	1.36	20	-0.22
Form B							
Avoidance	26	2.83	0.88	3.12	0.69	25	-2.80**
Anxiety	26	3.62	1.00	3.48	0.88	25	0.81

** $p < .01$, *** $p < .001$.

Table 2. Summary for Fit indices for Confirmatory Factor Analyses

Model	χ^2	*df*	CFI	TLI	RMSEA	WRMR
1st administration DLSH Avoidance Form A	0.29	1	1.00	1.05	.00	.00
1st administration DLSH Anxiety Form A	1.49	1	1.00	1.00	.07	.00
1st administration DLSH Avoidance Form B	1.22	1	1.00	1.00	.05	.00
1st administration DLSH Anxiety Form B	2.07	1	.98	.98	.10	.00
2nd administration DLSH Avoidance Form A	0.16	1	1.00	1.06	.00	.00
2nd administration DLSH Anxiety Form A	0.08	1	1.00	1.03	.00	.00
2nd administration DLSH Avoidance Form B	2.20	1	.95	.95	.22	.01
2nd administration DLSH Anxiety Form B	0.56	1	1.00	1.06	.00	.00

Note. CFI=comparative fit index; TLI = Tucker–Lewis index; RMSEA=root-mean-square error of approximation; WRMR = weighted root mean square residual.

Table 3. Dual-Language, Split-Half Reliability of the ECRS

Analysis (Pearson correlation)	Bilingual sample		Criterion sample		Group differences
	n	9 Korean items with 9 English items	*n*	18 English items	
Form A					
Avoidance	100	.61***	399	.89	z = -6.29 (p = .00)
Anxiety	100	.78***	399	.84	z = -1.55 (p = .06)
Form B					
Avoidance	104	.65***	399	.89	z = -5.80 (p = .00)
Anxiety	104	.64***	399	.84	z = -4.15 (p = .00)

Note. *** $p < .001$. All tests were one-tailed.

Table 4. Internal Reliability of the ECRS

Analysis (Coefficient alpha)	Bilingual sample		Criterion sample		Group differences
	n	9 Korean items with 9 English items	*n*	18 English items	
Form A					
Avoidance	100	.90	399	.94	$\chi^2 = 10.17$ ($p = .00$)
Anxiety	95	.90	399	.92	$\chi^2 = 1.77$ ($p = .09$)
Form B					
Avoidance	100	.84	399	.94	$\chi^2 = 40.29$ ($p = .00$)
Anxiety	100	.87	399	.92	$\chi^2 = 9.14$ ($p = .00$)

Note. All tests were one-tailed.

Table 5. Test-Retest Reliability of the ECRS

Analysis (Pearson correlation)	*n*	Bilingual sample	Group differences
Form A			
Avoidance English items	21	.53*	$z = -0.95$, $p = .34$
Avoidance Korean items	21	.72***	
Anxiety English items	21	.66***	$z = -1.00$, $p = .32$
Anxiety Korean items	21	.81***	
Form B			
Avoidance English items	26	.68***	$z = -0.13$, $p = .90$
Avoidance Korean items	26	.70***	
Anxiety English items	26	.84***	$z = 0.51$, $p = .61$
Anxiety Korean items	26	.79***	

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. All tests were two-tailed *r* to *Z* comparisons.

Table 6. Differences in Construct Validity Correlations

Correlated variable	*n*	English (9 items)	Korean (9 items)	Group differences
		Form A		
ECRS Avoidance				
Fear of Intimacy	100	.64***	.55***	z = 0.97 (*p* = .17)
Social Self-Efficacy	100	(.28**)	(.04)	z = 1.72 (*p* = .04)
ECRS Anxiety				
Fear of Intimacy	100	(.38***)	(.27**)	z = 0.86 (*p* = .19)
Social Self-Efficacy	100	.22*	.15	z = 0.51 (*p* = .31)
		Form B		
ECRS Avoidance				
Fear of Intimacy	104	.73***	.68***	z = 0.71 (*p* = .24)
Social Self-Efficacy	104	(.28**)	(.29**)	z = -0.08 (*p* = .47)
ECRS Anxiety				
Fear of Intimacy	104	(.47***)	(.65***)	z = -1.88 (*p* = .03)
Social Self-Efficacy	104	.21*	.33***	z = -0.92 (*p* = .18)

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. All tests were one-tailed. Correlations in parentheses were not expected to be significant on the basis of construct validity considerations.

Table 7. Means and Standard Deviations for Split Halves of the ECRS

Variable		English Language		Korean Language			
	n	*M*	*SD*	*M*	*SD*	*df*	*t*
First administration							
Form A							
Avoidance	100	2.77	1.10	2.63	1.05	99	1.40
Anxiety	100	3.77	1.19	3.77	1.11	99	-0.03
Form B							
Avoidance	104	2.80	1.03	2.79	1.11	103	0.14
Anxiety	104	3.68	1.08	3.65	0.97	103	0.46
Second administration							
Form A							
Avoidance	21	2.44	0.93	2.42	0.87	20	0.17
Anxiety	21	3.44	1.40	3.48	1.36	20	-0.22
Form B							
Avoidance	26	2.83	0.88	2.58	1.06	25	1.93
Anxiety	26	3.62	1.00	3.48	0.88	25	0.81

Note. *t* tests were conducted after removing two items from the ECRS: item #3 (I am very comfortable being close to romantic partners) and item #7 (I get uncomfortable when a romantic partner wants to be very close)

Table 8. Dual-Language, Split-Half Reliability of the ECRS

Analysis (Pearson correlation)	Bilingual sample		Criterion sample		Group differences
	n	Mixed language items	*n*	18 English items	
Form A					
Avoidance	100	.59***	399	.89	z = -6.57 (*p* = .00)
Anxiety	100	.78***	399	.84	z = -1.55 (*p* = .06)
Form B					
Avoidance	104	.72***	399	.89	z = -4.61 (*p* = .00)
Anxiety	104	.64***	399	.84	z = -4.15 (*p* = .00)

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. All tests were one-tailed. Pearson product-moment correlations were conducted after removing two items from the ECRS: item #3 (I am very comfortable being close to romantic partners) and item #7 (I get uncomfortable when a romantic partner wants to be very close).

Table 9. Internal Reliability of the ECRS

Analysis (Coefficient alpha)	Bilingual sample		Criterion sample		Group differences
	n	Mixed language items[a]	*n*	18 English items	
Form A					
Avoidance	98	.90	399	.94	$\chi^2 = 9.91$ ($p = .00$)
Anxiety	95	.90	399	.92	$\chi^2 = 1.75$ ($p = .09$)
Form B					
Avoidance	101	.90	399	.94	$\chi^2 = 10.14$ ($p = .00$)
Anxiety	100	.87	399	.92	$\chi^2 = 9.05$ ($p = .00$)

Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$. All tests were one-tailed. Coefficient alphas were calculated after removing two items from the ECRS: item #3 (I am very comfortable being close to romantic partners) and item #7 (I get uncomfortable when a romantic partner wants to be very close). [a] Regarding the Avoidance subscale, Form A was consisted of 7 English items and 9 Korean items and Form B was consisted of 9 English items and 7 Korean items.

Table 10. Test-Retest Reliability of the ECRS

Analysis (Pearson correlation)	*n*	Bilingual sample	Group differences
Form A			
Avoidance English items	21	.48*	$z = -1.15$, $p = .25$
Avoidance Korean items	21	.72***	
Anxiety English items	21	.66***	$z = -1.00$, $p = .32$
Anxiety Korean items	21	.81***	
Form B			
Avoidance English items	26	.68***	$z = -0.91$, $p = .36$
Avoidance Korean items	26	.80***	
Anxiety English items	26	.84***	$z = 0.51$, $p = .61$
Anxiety Korean items	26	.79***	

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. All tests were two-tailed *r* to *Z* comparisons. Pearson correlations were calculated after removing two items from ECRS: item #3 (I am very comfortable being close to romantic partners) and item #7 (I get uncomfortable when a romantic partner wants to be very close).

Table 11. Differences in Construct Validity Correlations

Correlated variable	*n*	English	Korean	Pearson *r* to *Z* comparisons
		Form A		
ECRS Avoidance		(7 items)	(9 items)	
Fear of Intimacy	100	.66***	.55***	z = 1.21 (*p* = .11)
Social Self-Efficacy	100	(.27**)	(.04)	z = 1.65 (*p* = .05)
ECRS Anxiety				
Fear of Intimacy	100	(.38***)	(.27**)	z = 0.86 (*p* = .19)
Social Self-Efficacy	100	.22*	.15	z = 0.51 (*p* = .31)
		Form B		
ECRS Avoidance		(9 items)	(7 items)	
Fear of Intimacy	104	.73***	.74***	z = -0.15 (*p* = .44)
Social Self-Efficacy	104	(.28**)	(.30**)	z = -0.16 (*p* = .44)
ECRS Anxiety				
Fear of Intimacy	104	(.47***)	(.65***)	z = -1.88 (*p* = .03)
Social Self-Efficacy	104	.21*	.33***	z = -0.92 (*p* = .18)

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. All tests were one-tailed. Pearson correlations were calculated after removing two items from the ECRS: item #3 (I am very comfortable being close to romantic partners) and item #7 (I get uncomfortable when a romantic partner wants to be very close). Correlations in parentheses were not expected to be significant on the basis of construct validity considerations.

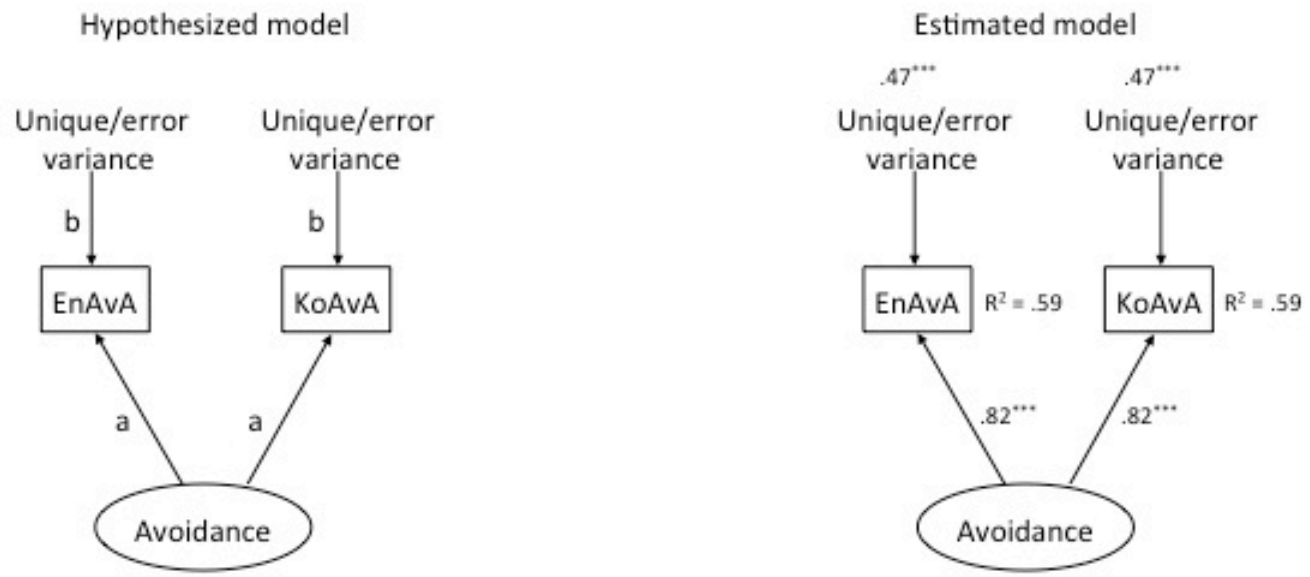

Figure 1. Model of the Avoidance DLSH version from Form A in the first administration

Note: EnAvA = English Avoidance items from Form A, KoAvA = Korean Avoidance items from Form A. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

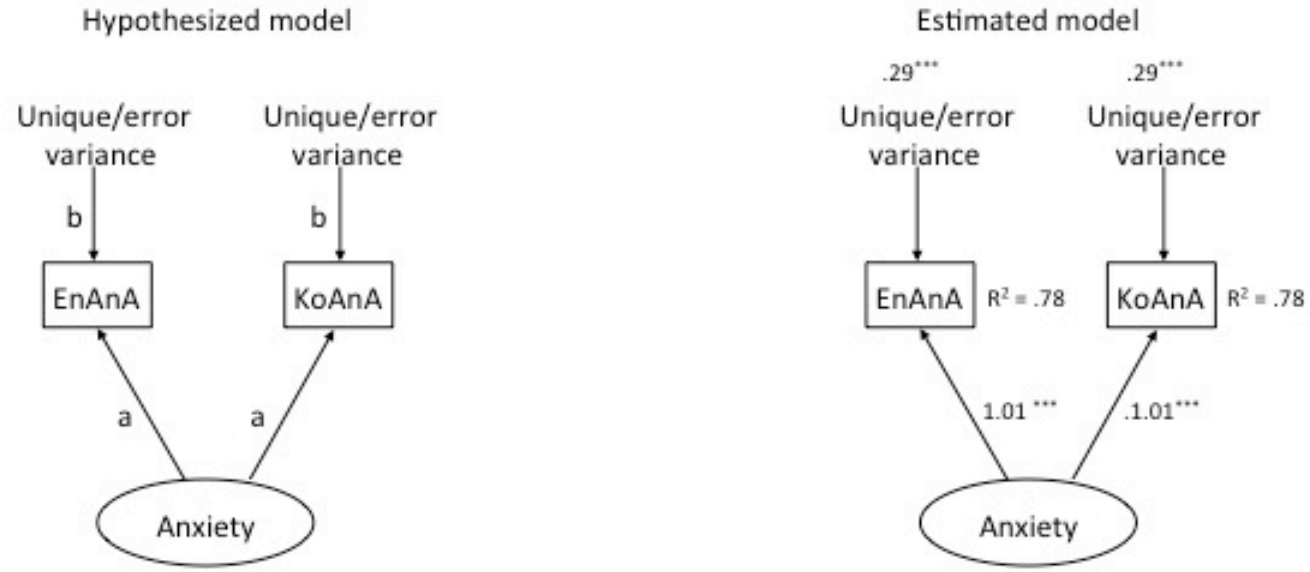

Figure 2. Model of the Anxiety DLSH version from Form A in the first administration

Note: EnAnA = English Anxiety items from Form A, KoAnA = Korean Anxiety items from Form A. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

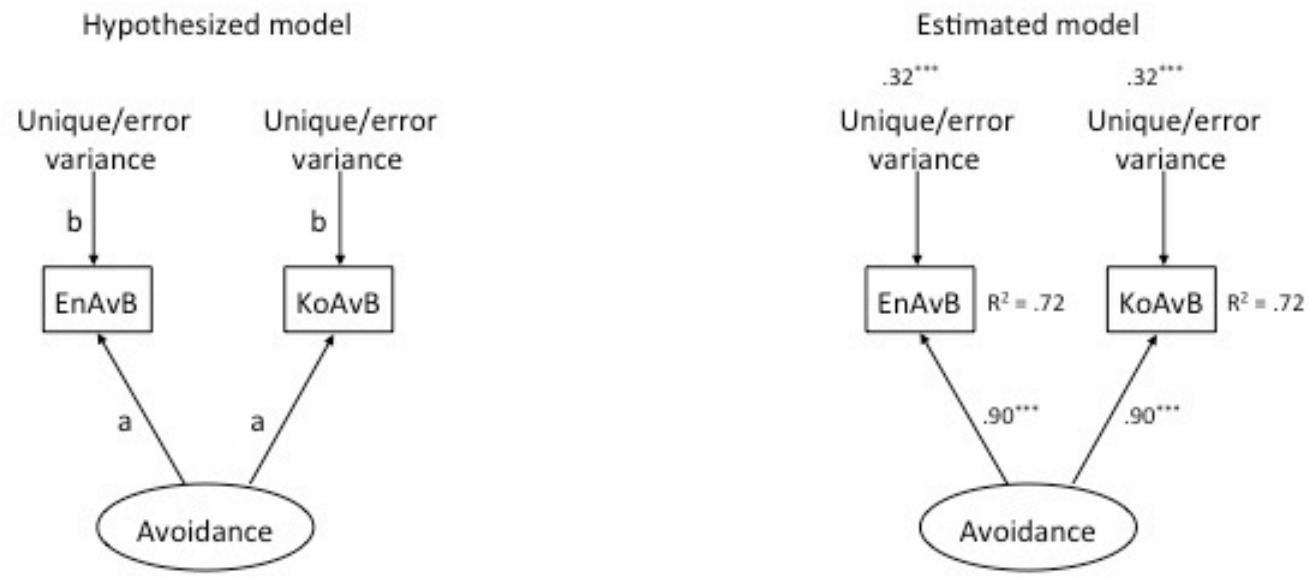

Figure 3. Model of the Avoidance DLSH version from Form B in the first administration

Note: EnAvB = English Avoidance items from Form B, KoAvB = Korean Avoidance items from Form B. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

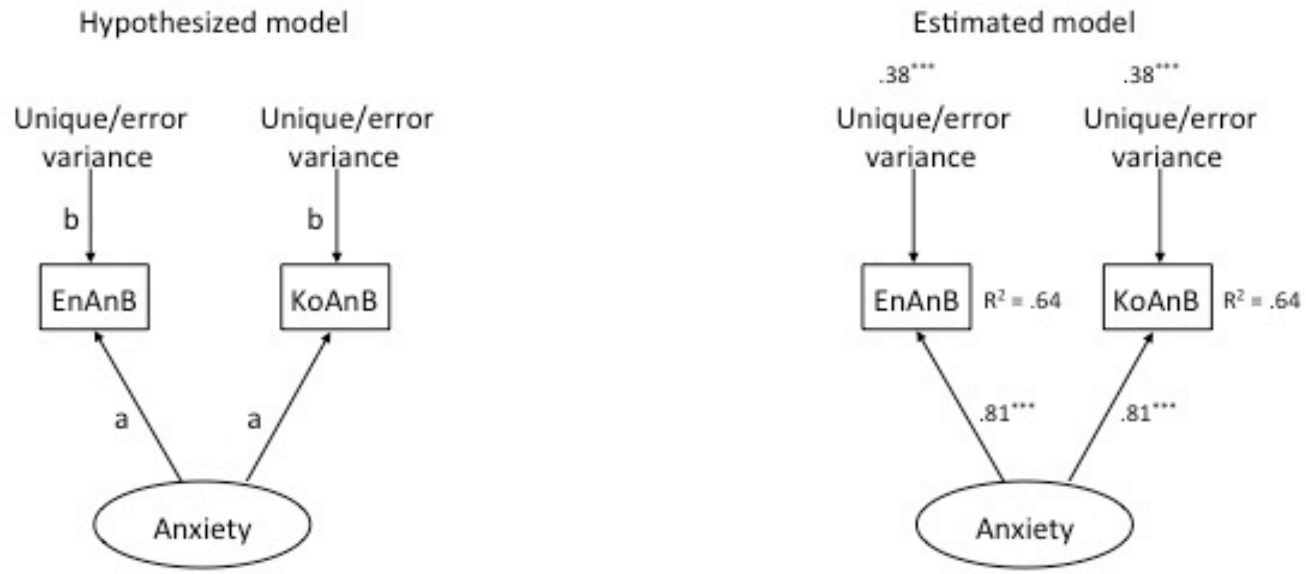

Figure 4. Model of the Anxiety DLSH version from Form B in the first administration

Note: EnAnB = English Anxiety items from Form B, KoAnB = Korean Anxiety items from Form B. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

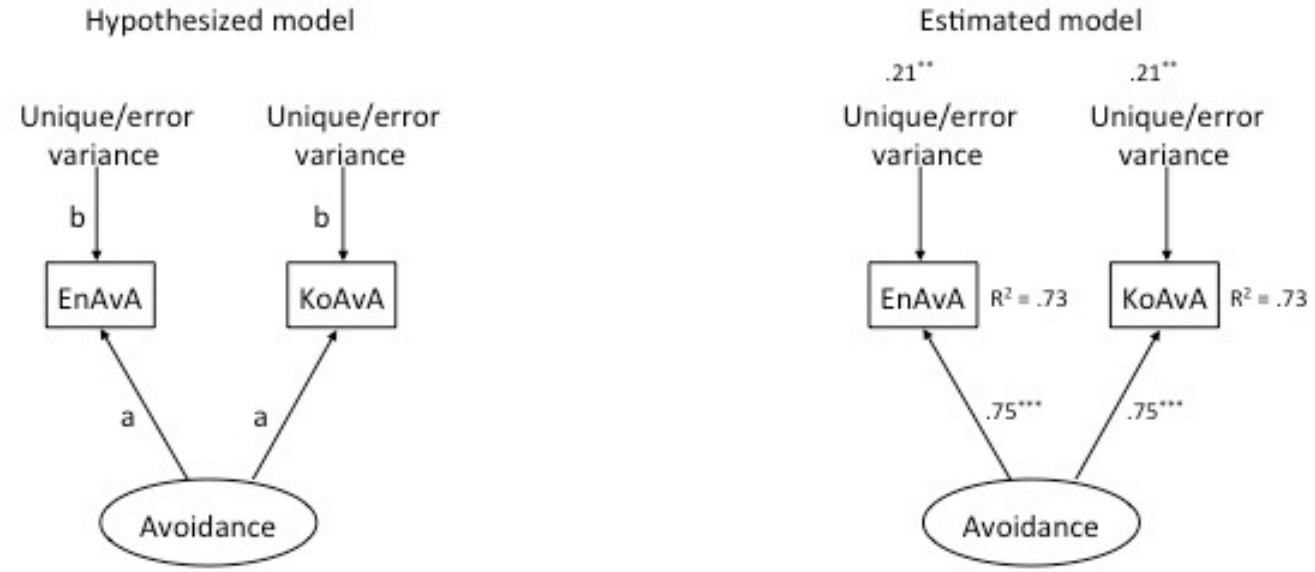

Figure 5. Model of the Avoidance DLSH version from Form A in the second administration

Note: EnAvA = English Avoidance items from Form A, KoAvA = Korean Avoidance items from Form A. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

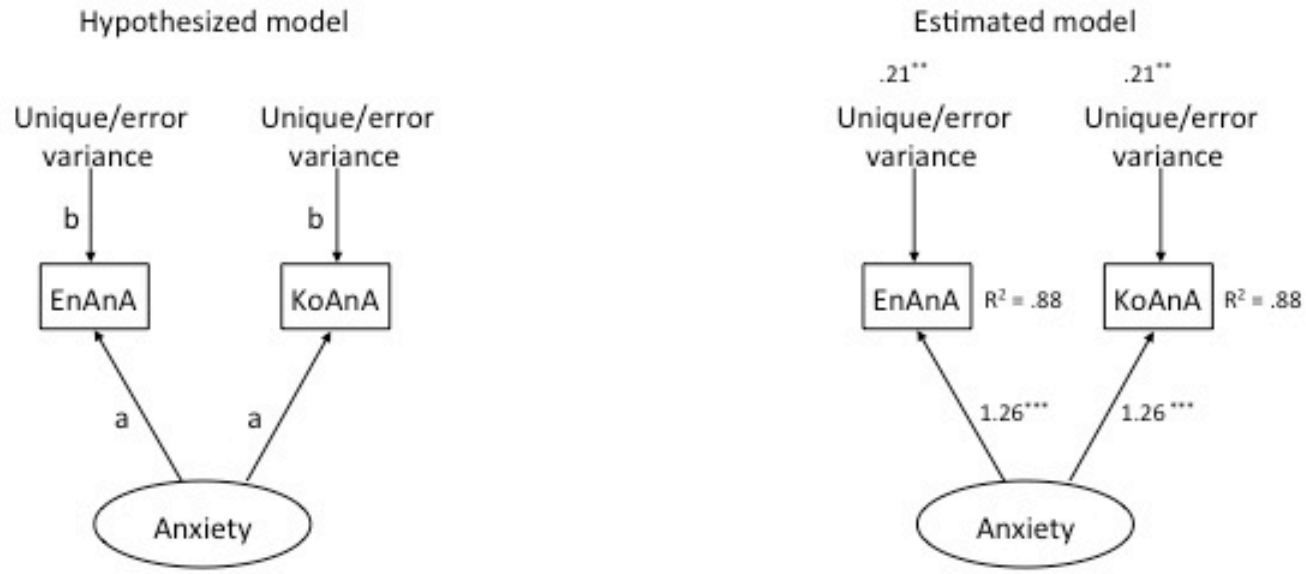

Figure 6. Model of the Anxiety DLSH version from Form A in the second administration

Note: EnAnA = English Anxiety items from Form A, KoAnA = Korean Anxiety items from Form A. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

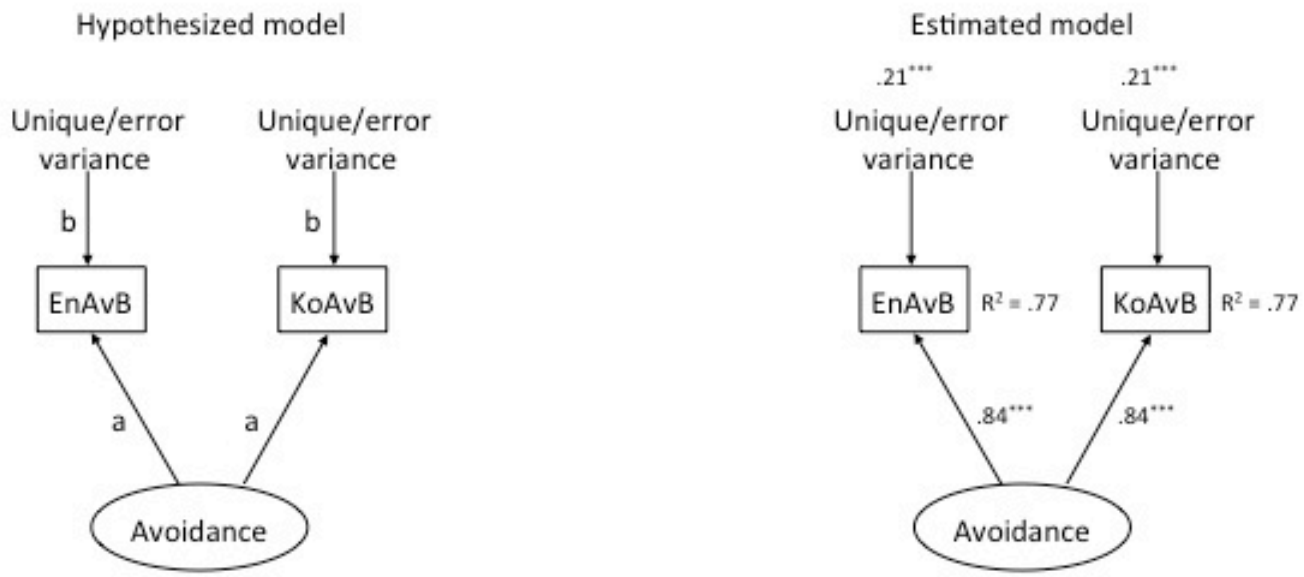

Figure 7. Model of the Avoidance DLSH version from Form B in the second administration

Note: EnAvB = English Avoidance items from Form B, KoAvB = Korean Avoidance items from Form B. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

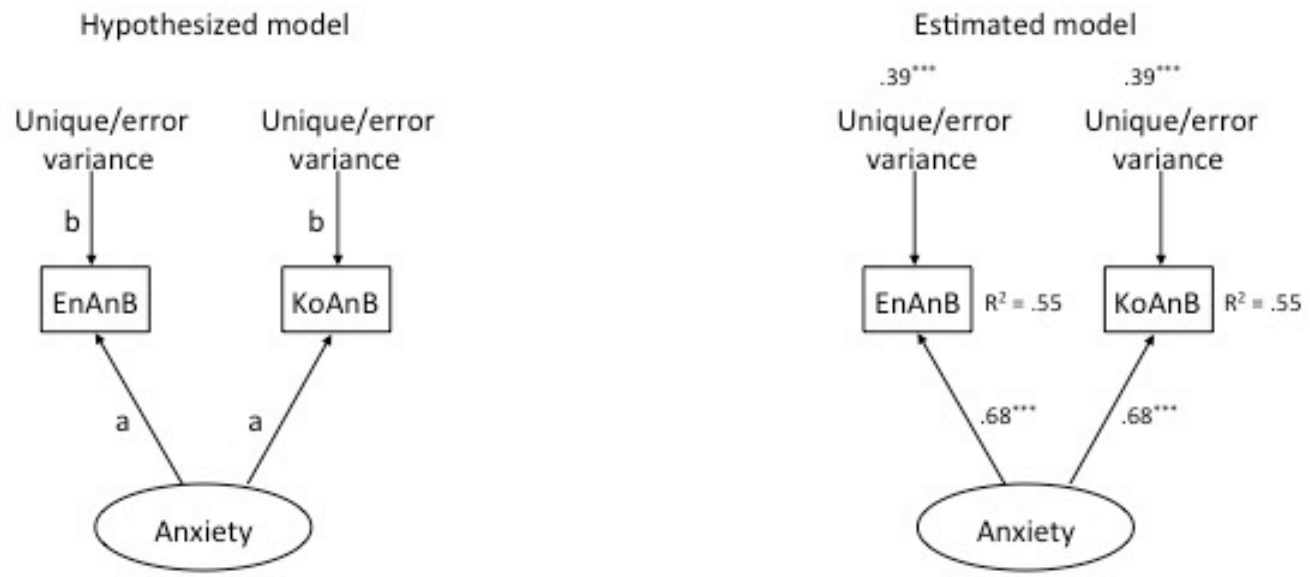

Figure 8. Model of the Anxiety DLSH version from Form B in the second administration

Note: EnAnB = English Anxiety items from Form B, KoAnB = Korean Anxiety items from Form B. The letters a indicate equal factor loadings, and the letters b indicate equal unique/error variances.

Appendix A: Description of the Item Modifications

Seven items (5, 12, 15, 16, 20, 30, and 34) from Cho (2008) were adjusted to provide a better adaption of the English wording. ECRS item 5, "Just when my partner starts to get close to me, I find myself pulling away" was translated by Cho (2008) as "나는 내 애인이 나에게 가까워지려고 하면 멀리 달아난다." The English equivalent of Cho's translation is "I find myself running away when my lover tries to get close," indicating a word-for-word translation that does not capture the idiomatic meaning of "pull away." Note that the underlined part from Cho's item is different from the new translation from the current study; it did not reflect the intended meaning of emotional distance. The new version of item 5 was translated into Korean as "나는 내 애인이 나에게 가까워지려고 하면 거리를 두려고 하는 나를 발견한다." The equivalent of this new translation in English is "I find myself keeping a distance from my lover when my lover tries to get close," which is a common way to express emotional distance in Korean.

ECRS item 12, "I often want to merge completely with romantic partners, and this sometimes scares them away," was translated by Cho (2008) as "나는 종종 내 애인에게 완전히 빠져들기 원하기 때문에, 그들이 질려 멀어진다." The English equivalent of Cho's translation is "I often want to be way into my lover, which scares him away," indicating a word-for-word translation that is relatively less natural in Korean. The new version of item 12 was translated into Korean as "나는 종종 내 애인에게 완전히 빠져들기 원하는데, 이런 나의 모습이 그를 (그녀를) 겁나게 해서 멀어지게 한다." The equivalent of this new translation in English is "I often want to be way into my love, but that freaks him or her out so that he or she runs away from me."

ECRS item 15, “I feel comfortable sharing my private thoughts and feelings with my partner,” was translated by Cho (2008) as “나는 나만의 생각이나 감정을 내 애인과 나누는 게 편안하다.” The English equivalent of Cho’s translation is “I feel comfortable sharing my own thoughts and emotions with my lover,” which did not capture the private aspects. Instead, it might be misunderstood as referring to one’s own unique thoughts and feelings. For Koreans, private thoughts and feelings would be the kind the one is less likely to share with others. The new version of item 5 was translated into Korean as “나는 내 마음속 담아둔 깊은 생각이나 진솔한 감정을 내 애인과 나누는 게 편안하다.” The equivalent of this new translation in English is “I feel comfortable sharing my deepest thoughts or true feelings with my lover.”

ECRS item 16, “My desire to be very close sometimes scares people away,” was translated by Cho (2008) as “나는 때로 사람들과 지나치게 가까워지려고 해서, 그들이 때때로 멀어진다.” The English equivalent of Cho’s translation is “Occasionally, I try to get too close to people, which scares people away.” Not only is the phrasing a word-for-word translation but it refers to people in general. The new version of item 16 was translated into Korean as “나는 때때로 친한 친구들과 지나치게 가까워지려고 하는데, 이것이 내 친한 친구들을 겁나게 해서 멀어지게 한다.” The equivalent of this new translation in English is “Occasionally, I try to get too close to my close friends, but that freaks them out so that they run away from me.”

ECRS item 20, “Sometimes I feel that I force my partners to show more feeling, more commitment,” was translated by Cho (2008) as “때때로, 내 애인이 더 많은 감정을 표현하고 관계에 좀 더 충실하도록 내가 강요한다고 느낀다.” The English equivalent of Cho’s translation is “Sometimes I feel that I demand my lover to show more feeling and to put more

effort in the relationship." There is no word for "commitment" in Korean. However, "devotion" in Korean is the word Koreans use to refer to loyalty and enthusiasm for a relationship. The new version of item 20 was translated into Korean as "때때로 내 애인에게 더 많은 감정과 더 많은 헌신을 보여 달라고 강요한다고 느낀다." The equivalent of this new translation in English is "Sometimes I feel that I demand my love to show more emotion and devotion."

ECRS item 30, "I get frustrated when my partner is not around as much as I would like," was translated by Cho (2008) as "내가 원하는 만큼 내 애인이 함께 시간을 보내지 않을 때 괴롭다." The English equivalent of Cho's translation is "I feel upset when my lover doesn't spend enough time with me as much as I want." The feeling "desperate" was chosen because it has a higher intensity than the feeling "upset" in Korean. The new version of item 30 was translated into Korean as "내가 원하는 만큼 내 애인이 함께 시간을 보내지 않을 때 좌절한다." The equivalent of this new translation in English is "I feel desperate when my lover doesn't spend enough time with me as much as I want."

ECRS item 34, "When romantic partners disapprove of me, I feel really bad about myself," was translated by Cho (2008) as "애인이 나를 존중하지 않으면, 나는 나 자신이 부끄럽다." The English equivalent of Cho's translation is "When my lover criticizes me frequently, I feel shameful about myself," which focused on the felling of shame. The new version of item 34 was translated into Korean as "애인이 나를 심하게 비난할 때면, 나 자신에 대해 정말 별로라고 생각된다." The equivalent of this new translation in English is "When my lover criticizes me frequently, I feel that I am not good enough," which conveys a more general negative feeling about self-esteem.

Appendix B: Experiences in Close Relationship Scale

The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Please use the following rating scale:

1	2	3	4	5	6	7
Disagree strongly	**Disagree somewhat**	**Disagree slightly**	**Neutral mixed**	**Agree slightly**	**Agree somewhat**	**Agree strongly**

1. I prefer not to show a partner how I feel deep down.
2. I worry about being abandoned.
3. I am very comfortable being close to romantic partners.
4. I worry a lot about my relationships.
5. Just when my partner starts to get close to me I find myself pulling away.
6. I worry that romantic partners won't care about me as much as I care about them.
7. I get uncomfortable when a romantic partner wants to be very close.
8. I worry a fair amount about losing my partner.
9. I don't feel comfortable opening up to romantic partners.
10. I often wish that my partner's feelings for me were as strong as my feelings for him/her.
11. I want to get close to my partner, but I keep pulling back.
12. I often want to merge completely with romantic partners, and this sometimes scares them away.
13. I am nervous when partners get too close to me.
14. I worry about being alone.
15. I feel comfortable sharing my private thoughts and feelings with my partner.
16. My desire to be very close sometimes scares people away.
17. I try to avoid getting too close to my partner.
18. I need a lot of reassurance that I am loved by my partner.
19. I find it relatively easy to get close to my partner.
20. Sometimes I feel that I force my partners to show more feeling, more commitment.
21. I find it difficult to allow myself to depend on romantic partners.
22. I do not often worry about being abandoned.

23. I prefer not to be too close to romantic partners.
24. If I can't get my partner to show interest in me, I get upset or angry.
25. I tell my partner just about everything.
26. I find that my partner(s) don't want to get as close as I would like.
27. I usually discuss my problems and concerns with my partner.
28. When I'm not involved in a relationship, I feel somewhat anxious and insecure.
29. I feel comfortable depending on romantic partners.
30. I get frustrated when my partner is not around as much as I would like.
31. I don't mind asking romantic partners for comfort, advice, or help.
32. I get frustrated if romantic partners are not available when I need them.
33. It helps to turn to my romantic partner in times of need.
34. When romantic partners disapprove of me, I feel really bad about myself.
35. I turn to my partner for many things, including comfort and reassurance.
36. I resent it when my partner spends time away from me.

Appendix C: Social Self-Efficacy

Instruction: To what extent does each of these 6 statements describe you? Indicate your level of agreement by using the following scale:

1 = Strongly agree

2 = Agree

3 = Neutral

4 = Disagree

5 = Strongly disagree

1. It is difficult for me to make new friends.
2. If I see someone I would like to meet, I go to that person instead of waiting for him or her to come to me.
3. If I meet someone interesting who is hard to make friends with, I'll soon stop trying to make friends with that person.
4. When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily
5. I do not handle myself well in social gatherings.
6. I have acquired my friends through my personal abilities at making friends.

Appendix D: Fear of Intimacy Scales

Instruction of part A: imagine you are in a close, dating relationship. Respond to the following statement as you would if you were in that close relationship. Rate how characteristic each statement is of you on a scale of 1 to 5 as described below.

1 = not at all characteristic of me

2 = slightly characteristic of me

3 = moderately characteristic of me

4 = very characteristic of me

5 = extremely characteristic of me

Note. In each statement "O" refers to the person who would be in the close relationship with you.

1. I would feel uncomfortable telling O about things in the past that I have felt ashamed of.
2. I would feel uneasy talking with O about something that has hurt me deeply.
3. I would feel comfortable expressing my true feelings to O.
4. If O were upset I would sometimes be afraid of showing that I care.
5. I might be afraid to confide my innermost feelings to O.
6. I would feel at ease telling O that I care about him/her.
7. I would have a feeling of complete togetherness with O.
8. I would be comfortable discussing significant problems with O.
9. A part of me would be afraid to make a long-term commitment to O.
10. I would feel comfortable telling my experiences, even sad ones, to O.
11. I would probably feel nervous showing O strong feelings of affection.
12. I would find it difficult being open with O about my personal thoughts.
13. I would feel uneasy with O depending on me for emotional support.
14. I would not be afraid to share with O what I dislike about myself.
15. I would be afraid to take the risk of being hurt in order to establish a closer relationship with O.
16. I would feel comfortable keeping very personal information to myself.
17. I would not be nervous about being spontaneous with O.
18. I would feel comfortable telling O things that I do not tell other people.

19. I would feel comfortable trusting O with my deepest thoughts and feelings.
20. I would sometimes feel uneasy if O told me about very personal matters.
21. I would be comfortable revealing to O what I feel are my shortcomings and handicaps.
22. I would be comfortable with having a close emotional tie between us.
23. I would be afraid of sharing my private thoughts with O.
24. I would be afraid that I might not always feel close to O.
25. I would be comfortable telling O what my needs are.
26. I would be afraid that O would be more invested in the relationship than I would do.
27. I would feel comfortable about having open honest communication with O.
28. I would sometimes feel uncomfortable listening to O's personal problems.
29. I would feel at ease to completely be myself around O.
30. I would feel relaxed being together and talking about our personal goals.

Instruction of part B: respond to the following statements as they apply to your past relationships. Rate how characteristic each statement is of you on a scale of 1 to 5 as described in the instructions of part A.

31. I have shied away from opportunities to be close to someone.
32. I have held back my feelings in previous relationships.
33. There people who think that I an afraid to get close to them.
34. There are people who think that I am not an easy person to get to know.
35. I have done things in previous relationships to keep me from developing closeness.

Vita

Ji-Sun Jeong received a Bachelor of the Arts in Psychology from the Duksung Women's University, South Korea in 2005 and received a Master of the Arts in Psychology from the Ewha Women's University, South Korea in 2008. She began her studies in Counseling Psychology at the University of Tennessee, Knoxville in 2010 under the mentorship of Brent Mallinckrodt. After receiving a Masters of the Arts in Psychology and a Ph.D. from the same Program, she plans to complete her predoctoral internship at State University of New York at Buffalo Counseling Center in 2016.